HRS DOCUMENTATION RECORD COVER SHEET

Name of Site: Curtis Papers, Inc.
404 Frenchtown Road, Milford, New Jersey

EPA ID No.: NJD057143984

Contact Persons

Documentation Record: Dennis Munhall
U.S. Environmental Protection Agency
New York, New York
(215) 637-4343
Munhall.Dennis@epa.gov

Pathways, Components, or Threats Not Scored

Ground Water Migration Pathway

The ground water migration pathway was evaluated but not scored because only a small number of ground water targets were identified within 4 miles of the sources. Therefore, evaluation of the ground water migration pathway does not impact the overall site score.

Soil Exposure Pathway

The soil exposure pathway was evaluated but not scored because no soil contamination has been identified in a residential or worker area. Therefore, evaluation of the soil exposure pathway does not impact the overall site score.

Air Migration Pathway

The air migration pathway was evaluated but not scored because an observed release to air within a target area has not been documented via analysis of air samples collected from the site and the potential target population is not large. Therefore, evaluation of the air migration pathway does not impact the overall site score.

HRS DOCUMENTATION RECORD

Name of the Site:	Curtis Papers, Inc.
EPA Region:	2
Street Address of Site*:	404 Frenchtown Road
City, County, State:	Milford, Hunterdon County, New Jersey 08848-1331
General Location in State:	The Curtis Papers facility is located on the western border of central New Jersey.
Topographic Map:	Frenchtown, New Jersey-Pennsylvania

Latitude: 40º33'42.33" North Longitude: 75º05'23.43" West

Reference for latitude and longitude: Measured from the southern corner of the building located on the northwest border of the Curtis Papers, Inc. facility (Curtis Papers), formerly owned by the James River Paper Company (References [Refs.] 13 and 14). The boundaries of the Curtis Papers facility are shown in Reference 7, page 95. Based on the facility layout shown in Reference 7, page 95, the latitude and longitude were measured from the southern corner of building number 36.

** The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.*

The Curtis Papers facility was formerly owned by the James River Paper Company and is referenced by that name as well in this HRS documentation record. All references to the James River Paper Company facility in this HRS documentation record refer to the former James River Paper Company facility that is currently owned by Curtis Papers and is part of the Curtis Papers, Inc. site proposed for NPL listing. Likewise, Curtis Specialty Papers and Curtis Papers, Inc. are the same facility and are used synonymously in this HRS documentation record.

WORKSHEET FOR COMPUTING HRS SITE SCORE

	S	S^2
Ground Water Migration Pathway Score (S_{gw})	NS	NS
Surface Water Migration Pathway Score (S_{sw})	100.00	10,000
Soil Exposure Pathway Score (S_s)	NS	NS
Air Migration Score (S_a)	NS	NS
$S^2_{gw} + S^2_{sw} + S^2_s + S^2_a$		10,000
$(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4$		2,500
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4}$		50.00

Notes:
NS Not scored

TABLE 4-1 --SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Watershed Evaluated: Delaware River			
Drinking Water Threat			
Likelihood of Release:			
1. Observed Release	550	550	
2. Potential to Release by Overland Flow:			
2a. Containment	10		
2b. Runoff	25		
2c. Distance to Surface Water	25		
2d. Potential to Release by Overland Flow [lines 2a(2b + 2c)]	500		
3.Potential to Release by Flood:			
3a. Containment (Flood)	10		
3b. Flood Frequency	50		
3c. Potential to Release by Flood (lines 3a x 3b)	500		
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500		
5. Likelihood of Release (higher of lines 1 and 4)	550		550
Waste Characteristics:			
6. Toxicity/Persistence	(a)	10000	
7. Hazardous Waste Quantity	(a)	100	
8. Waste Characteristics	100		32
Targets:			
9. Nearest Intake	50	0	
10. Population:			
10a. Level I Concentrations	(b)		
10b. Level II Concentrations	(b)		
10c. Potential Contamination	(b)		
10d. Population (lines 10a + 10b + 10c)	(b)		
11. Resources	5	5	
12. Targets (lines 9 + 10d + 11)	(b)		5
Drinking Water Threat Score:			
13. Drinking Water Threat Score [(lines 5x8x12)/82,500, subject to a max of 100]	100		1.07
Human Food Chain Threat			
Likelihood of Release:			
14. Likelihood of Release (same value as line 5)	550		550
Waste Characteristics:			
15. Toxicity/Persistence/Bioaccumulation	(a)	5×10^8	
16. Hazardous Waste Quantity	(a)	100	
17. Waste Characteristics	1000		320
Targets:			
18. Food Chain Individual	50	45	
19. Population			
19a. Level I Concentration	(b)		
19b. Level II Concentration	(b)	0.03	
19c. Potential Human Food Chain Contamination	(b)		
19d. Population (lines 19a + 19b + 19c)	(b)	0.03	
20. Targets (lines 18 + 19d)	(b)		45.03
Human Food Chain Threat Score:			
21. Human Food Chain Threat Score [(lines 14x17x20)/82500, subject to max of 100]	100		96

Environmental Threat			
Likelihood of Release:			
22. Likelihood of Release (same value as line 5)	550		550
Waste Characteristics:			
23. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	5×10^8	
24. Hazardous Waste Quantity	(a)	100	
25. Waste Characteristics	1000		320
Targets:			
26. Sensitive Environments			
26a. Level I Concentrations	(b)		
26b. Level II Concentrations	(b)	25	
26c. Potential Contamination	(b)		
26d. Sensitive Environments (lines 26a + 26b + 26c)	(b)		
27. Targets (value from line 26d)	(b)		25
Environmental Threat Score:			
28. Environmental Threat Score [(lines 22x25x27)/82,500 subject to a max of 60]	60		53.33
Surface Water Overland/Flood Migration Component Score for a Watershed			
29. Watershed Score[c] (lines 13+21+28, subject to a max of 100}	100		100
Surface Water Overland/Flood Migration Component Score			
30. Component Score (S_{sw})[c] (highest score from line 29 for all watersheds evaluated)	100		100

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

REFERENCES

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Site Summary – Curtis Papers, Inc.

The Curtis Papers facility is located at 404 Frenchtown Road, Milford, Hunterdon County, New Jersey (Ref. 3, p. 1; Ref. 4, pp. 4 of 26 and 6 of 26; Ref. 13). The facility is bordered by Quequacommissacong Creek to the northwest, Frenchtown Road to the east/northeast, an unnamed creek to the south, and the Delaware River to the west. The surrounding area is predominantly residential, with the nearest residences approximately 0.1 mile to the north and southeast (Ref. 4, p. 4 of 26; Ref. 7, p. 95; Ref. 10, p. 7). (Quequacommissacong Creek is officially known as Hakihokake Creek and is locally known as Quequacommissacong Creek and appears in reference documentation as Quequacommissacong Creek [Ref. 7, p. 95; Ref. 27, p. 76; Ref. 35; Ref. 36]. Quequacommissacong Creek also is spelled as Quequacommissacong Creek and Quequacommisacong Creek [Ref. 7, pp. 76 and 95; Ref. 10, pp. 1 and 8]. Part of Quequacommisacong Creek also is known as Milord Creek (Ref. 43). Because the majority of reference documentation refers to the creek as Quequacommissacong Creek, this local reference to the creek is used throughout this HRS documentation record.)

The Curtis Papers facility is an abandoned paper mill occupying approximately 40 acres in Milford, Hunterdon County, New Jersey. The facility consists of a complex of buildings, including a former coatings facility, a cogeneration power plant, and a wastewater treatment plant (Ref. 3, pp. 1, 15, 16, 36; Ref. 4, p. 4 of 26; Ref. 5, p. 2; Ref. 7, p. 95). The paper mill operated for approximately 90 years (Ref. 3, p. 1; Ref. 5, p. 2). The main mill, known as the Milford Mill, is comprised of approximately 61 separate areas. The Milford Mill converted paper pulp to finished food grade paper (Ref. 3, p. 15). The former coatings facility (also referred to as the diaphane plant) is located approximately 400 feet northwest of the main Milford Mill building. The coatings facility operated from approximately 1935 to 1988 compounding and coating solvent-based resins onto paper and other products (Ref. 3, p. 16).

The James River Paper Company operated the Milford Mill from 1977 to 1995. In 1995, the mill was bought by Crown Vantage, which operated it until 2001. In 2001, the mill was bought and operated by Curtis Specialty Papers (Ref. 3, p. 1). During the time the mill was in operation, the facility reported several spills on the property (Ref. 3, pp. 55 and 56). The New Jersey Department of Environmental Protection (NJDEP) issued several notices of violation to the facility. The notices of violation included unpermitted discharges and improper containers, training, and recordkeeping (Ref. 3, pp. 61 to 65). The facility also held air permits and New Jersey Pollutant Discharge Elimination System permits, operated a wastewater treatment plant, and utilized numerous USTs (Ref. 3, pp. 3, 11, 35, 36, 58, 59). In July 2003, the mill was shut down and Curtis Specialty Papers declared bankruptcy (Ref. 5, p. 2).

In August 2001, Curtis Specialty Papers submitted a preliminary assessment (PA) report and remedial investigation work plan to NJDEP as part of an effort to comply with the Industrial Site Recovery Act (Ref. 3; Ref. 6, p. 1; Ref. 7). The company identified 20 areas of concern (AOCs) at the Curtis Papers facility (Ref. 3, pp. 44 to 52). In July 2003, Curtis Specialty Papers shut down the operations (Ref. 5, p. 2). There is no documentation of remedial activities occurring at the AOCs prior to the shutdown. The facility was abandoned and left unsecured (Ref. 5, p. 2). The PA and site inspection investigations identified numerous areas of polychlorinated biphenyl (PCB) contamination and transformer storage areas. These areas include: (1) main transformer yard (AOC-2) (Ref. 7, pp. 11and 12); (2) interior transformer yard (AOC-3) (Ref. 7, pp. 14 and 15); (3) auxiliary transformer substation (AOC-4) (Ref. 7, p. 16); (4) mill basement transformer (AOC-5) (Ref. 7, p. 18); (5) bulldozer shed area (location of an isolated PCB hot spot (AOC-8) (Ref. 7, pp. 23 and 25); (6) PCB transformers and spill area adjacent to Building No. 54 (AOC-11) (Ref. 7, pp. 27 and 28) (7) interior courtyard (AOC-13) (Ref. 7, p. 30); and (8) mill

transformer (AOC-15) (Ref. 7, p. 32). Transformers made before 1977 are known to contain PCB dielectric fluid (Ref. 34).

Since the abandonment of the facility in 2003, it has been repeatedly vandalized and scavenged for materials. In October 2006, the NJDEP Bureau of Emergency Response, Bureau of Publicly Funded Site Remediation, and Office of Site Safety and Health met with the Mayor of the Borough of Milford, New Jersey, to determine whether immediate NJDEP actions were warranted at the Curtis Papers facility. Because of the presence of unsecured drums, aboveground storage tanks (AST), numerous labeled and unlabeled chemical containers, and high-pressure oxygen tanks, NJDEP initiated emergency removal activities. On October 20, 2006, NJDEP and its emergency response contractor began activities that included securing visible oil and hazardous materials containers, classifying materials for waste disposal, inspecting ASTs to determine contents, collecting and stowing empty containers at the former hazardous materials storage area, and transporting and disposing of materials (Ref. 5). Bottles of chemicals, thermometers, hydrometers, lead acid batteries, drums of waste oil, and anhydrous ammonia high pressure cylinders were removed from the facility (Ref. 5, pp. 3-6).

In May 2007, EPA tasked the EPA Superfund Technical Assessment and Response Team (START) contractor to perform a removal assessment at the Curtis Papers facility. On May 4, 2007, START mobilized to the facility and met with EPA to conduct a site walk and discuss the upcoming multimedia sampling event (Ref. 4, p 8 of 26). In August 2007, START returned to the Curtis Papers facility to collect additional soil samples in AOCs and sediment samples from Quequacommissacong Creek (Ref. 10, p. 1).

The soil samples collected from the 2007 investigation identified the presence of PCBs in AOCs known to be used for the storage of PCB-containing transformers, waste materials, and other miscellaneous materials. PCBs also were identified in the bank soil of Quequacommissacong Creek and in the sediment of one of the facility's discharge pipes, as documented in the source description section of this HRS documentation record. The presence of PCBs in the bank soil of Quequacommissacong Creek and in one of the discharge pipes to Quequacommissacong Creek indicates PCB contamination from the Curtis Papers facility has migrated to banks of Quequacommissacong Creek through various outfalls from the facility into Quequacommissacong Creek (Ref. 7, pp. 115 and 116). The locations of the bank soil samples containing PCBs have been documented to be flooded by Quequacommissacong Creek (Ref. 18). PCBs were detected in a sediment sample collected from Quequacommissacong Creek downstream of the facility outfalls, as documented in Section 4.0 of this HRS documentation record. The presence of PCBs in areas known to be used for the storage of PCBs, in banks of Quequacommissacong Creek, in the sediment (sludge) of a discharge pipe from the facility, and in the sediment of Quequacommissacong Creek downstream of the facility outfalls, indicates that the Curtis Papers facility has released PCBs to Quequacommissacong Creek.

As documented in Section 4.1.1.1 of this HRS documentation record, Quequacommissacong Creek is a level II human food chain fishery because PCBs were detected in Quequacommissacong Creek at concentrations documenting an observed release and the creek at the PCB-contaminated sediment locations is used for fishing for human consumption.

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Area of Concern (AOC) 8
Number of source: 1
Source type: Contaminated Soil

Source 1 is an area of PCB-contaminated soil identified in AOC-8. AOC-8 is an area adjacent to a building formerly used as a bulldozer shed (Ref. 3, p. 47). In August 2001, Curtis Specialty Papers completed a PA report for the Curtis Papers facility (formerly owned by the James River Paper Company) (Ref. 3, pp. 1 and 14). AOC-8 was described in the report as a location where pipe discharges were observed into an unnamed creek/drainage ditch running along the southeast side of the main mill building. A soil pile of unknown origin was observed in AOC-8. An incinerator was determined to have been located in the vicinity of AOC-8. The incinerator was reportedly used to burn mill trash. Coal was stored in the vicinity of AOC-8 (Ref. 3, p. 47).

In August 2001, an environmental consultant to Curtis Specialty Papers conducted a site inspection of the Curtis Papers facility. The findings of the site inspection indicated that the piping observed in AOC-8 was associated with roof runoff, and a septic system leach pit and the soil pile. The soil sample was analyzed by Toxic Characteristics Leachate Procedure (TCLP). No hazardous substances were detected in the soil sample (Ref. 7, p. 23). A soil sample (AOC8-D12) collected near the coal storage area contained polychlorinated biphenyls (PCBs) at 7.41 parts per million (ppm) (Ref. 7, pp. 24, 71, and 109). The site inspection report provides the layout of AOC-8. The layout shows a former pipe discharge, a 1,760 UST, a soil pile, an incinerator area and a coal storage area (Ref. 7, p. 107).

In August 2007, EPA's START contractor conducted a site inspection at the facility. Soil samples were collected at AOC-8 (Source 1). Sample results indicated the presence of PCBs at up to 2,100 parts per billion (ppb) (Ref. 10, pp. 1, 22, 50; Ref. 9, p. 6; Ref. 12, p. 770).

As documented in Table 4 of this HRS documentation record, Source 1 is an area of PCB (Aroclor-1260)-contaminated soil located in the area of AOC-8.

Location of source, with reference to a map of the facility: Source 1 (AOC-8) is located in the eastern portion of the facility (Ref. 7, p. 95). See Reference 16 for the location of the source.

Containment:

Release to ground water: The ground water migration pathway was not scored.

Release via overland migration and/or flood: As documented in Table 4, surface soil samples collected from AOC-8 contain PCBs (Aroclor-1260). No maintained engineered cover or functioning and maintained run-on control system and runoff management system is documented in AOC-8 (Ref. 3, p. 47; Ref. 9, pp. 5-7). Therefore, a containment factor value for the surface water migration pathway is assigned a value of 10 (Ref. 1, Table 4-2).

Gas release to air: The gas release to air migration pathway was not scored.

Particulate release to air: The particulate release to air migration pathway was not scored.

2.4 WASTE CHARACTERISTICS

2.4.1 HAZARDOUS SUBSTANCES

On August 14, 2007, the EPA START collected surface soil samples from AOC-8 (Ref. 10, p. 1). Two background surface soil samples also were collected (Ref. 10, pp. 2 and 30). The soil samples underwent multiple analyses at the laboratory used under the Contract Laboratory Program (CLP), including all parameters on the EPA Target Compound List (TCL) (Ref. 10, p. 2). Surface soil samples were collected from 0 to 24 inches below ground surface (bgs) using a decontaminated stainless steel trowel (Ref. 4, p. 13 of 26). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4.

The background and source soil samples were similar because the samples: (1) were collected using the same procedures as documented in References 4 and 10; (2) were collected within the same time frame and therefore, the same weather conditions (Ref. 10, pp. 21 and 30); (3) were collected at locations with similar topography and land use (Ref. 10, p. 8); (4) were analyzed using the same methods (Ref. 4, p. 13 of 26; Ref. 10, pp. 8, 21, 22, and 30); and (5) were collected from the same soil type (Ref. 16; Ref. 19; Ref. 20). A description of the background and release soil samples is presented in Tables 1 and 3 of this HRS documentation record. Two of the soil samples collected from Source 1 contained ash (waste) (Ref. 9, pp. 5 and 6). One of the soil samples was collected from an area of stained soil (Ref. 9, pp. 5 and 7). The background surface soil samples JRP52-SS-0114-P4 and JRP53-SS-0118-P4 were used to document the background surface soil concentrations in Table 2 of this HRS documentation record. (Ref. 10, p. 30) PCBs (Aroclor-1260) were not detected in either of the two background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) (Ref. 10, p. 30; Ref. 11, pp. 262 and 263). The sampling locations are provided in Reference 10, Figure 2, page 8, and Reference 16.

As documented in Table 4 of this HRS documentation record, PCBs were detected in soil samples collected from Source 1, AOC-8 (Ref. 16). A review of Reference 7, pages 95 and 107, and Reference 16, illustrates that the soil samples collected from AOC-8 were located within the boundaries of the Curtis Papers facility (formerly owned by the James River Paper Company). The facility operated at this location as a paper company for 90 years (Ref. 3, p. 1). No other source of PCB contamination, other than the paper company, has been identified in this area.

TABLE 1
BACKGROUND SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample Identification on maps and in logbook)	Sample Description	Location	Reference
JRP52-SS-0114-P4 (SS-52)	Surface soil, moderate brown sandy silt, loose, rootlets and other organic material; then moderate brown silty sand and gravel, loose, gravel up to 4 inches in diameter	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to an abandoned building near 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30
JRP53-SS-0118-P4 (SS-53)	Moderate brown clayey silt; then moderate brown clayey silt and gravel	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30

Notes:

JRP James River Paper Company (a former owner of the Curtis Papers facility)
P Sample event 4
SS Surface Soil

TABLE 2
BACKGROUND SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Hazardous Substance	Sample Date	Conc. (µg/kg)	SQL (µg/kg)	References
JRP52-SS-0114-P4 (SS-52)	B4DT1	PCBs (Aroclor-1260)	8/17/2007	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 262; 40
JRP53-SS-0118-P4 (SS-53)	B4DT2	PCBs (Aroclor-1260)	8/17/2007	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 263; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample ID shown above. For example, JRP06-SS-1224-P4 was recorded in the logbook as SS-06 (Ref. 10, p. 8; Ref. 9 pp. 5-7).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 122 through 125.

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
JRP James River Paper (a former owner of the Curtis Papers facility)
P Sample event 4
PCBs Polychlorinated biphenyls
SS Surface soil
SQL Sample Quantitation Limit
U Not detected at or above the SQL

TABLE 3
SOURCE 1 SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample Identification on maps and in logbook)	Sample Description	Location	Reference
JRP11-SS-0215-P4 (SS-11)	Shale mixed with possibly ash; then moderate brown dense clayey silt	Curtis Papers facility, south portion, approximately 500 feet east of the Delaware River, within the area of AOC-8	9, pp. 5 and 6; 10, pp. 8 and 22
JRP12-SS-0215-P4 (SS-12)	Silt with little clay; then ash with pieces of coal; then moderate brown dense clayey silt	Curtis Papers facility, south portion, approximately 500 feet east of the Delaware River, within the area of AOC-8	9, p. 6; 10, pp. 8 and 22
JRP13-SS-0215-P4 (SS-13)	Grayish-red, then some black ash; then moderate brown dense clayey silt	Curtis Papers facility, south portion, approximately 500 feet east of the Delaware River, within the area of AOC-8	9, pp. 5 and 7; 10, pp. 8 and 22
JRP14-SS-0215-P4 (SS-14)	Sandy material; then layer of stained soil; then sandy material; then moderate brown dense clayey silt	Curtis Papers facility, south portion, approximately 500 feet east of the Delaware River, within the area of AOC-8	9, pp. 5 and 7; 10, pp. 8 and 22

Notes:

AOC Area of concern
JRP James River Paper Company (a former owner of the Curtis Papers facility)
P Sample event 4
SS Surface Soil

TABLE 4
SOURCE 1 SOIL SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Concentration (Conc.) (µg/kg)	SQL (µg/kg)	References
JRP11-SS-0215-P4 (SS-11)	B4DK4	8/14/2007	PCBs (Aroclor-1260)	310	43	10, pp. 1, 22, 50; 9, p. 6; 12, p. 769; 40
JRP12-SS-0215-P4 (SS-12)	B4DK5	8/14/2007	PCBs (Aroclor-1260)	2,100 J	38	10, pp. 1, 22, 50, ; 9, p. 6; 12, p. 770; 40
JRP13-SS-0215-P4 (SS-13)	B4DK6	8/14/2007	PCBs (Aroclor-1260)	440 J	37	10, pp. 1, 22, 50; 9, p. 7; 12, p. 771; 40
JRP14-SS-0215-P4 (SS-14)	B4DK7	8/14/2007	PCBs (Aroclor-1260)	150 J	38	10, pp. 1, 22, 50; 9, p. 7; 12, p. 772; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP06-SS-1224-P4 was recorded in the logbook as SS-06 (Ref. 10, p. 8; Ref. 9 pp. 5-7).

The data validation for the PCB analysis of these samples is presented in Reference 12, pages 755 through 758.

µg/kg	Micrograms per kilogram
J	Estimated concentration; value is estimated due to the percent difference between results obtained in two chromatographic columns exceeding primary criteria. The analytical results are biased unknown, however, the presence of the analyte is not in question (Ref. 12, p. 757).
JRP	James River Paper (a former owner of the Curtis Papers facility)
SS	Surface soil
P	Sample event 4
PCBs	Polychlorinated biphenyls
SQL	Sample Quantitation Limit
U	Not detected at or above SQL

2.4.1 HAZARDOUS SUBSTANCES

2.4.2.1 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 1.

2.4.2.1.2 Hazardous Waste Stream Quantity

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 1.

2.4.2.1.3 Volume

The information available is not sufficient to adequately support evaluation of the volume for Source No. 1.

Volume Assigned: 0

2.4.2.1.4 Area

As documented in Table 4, soil samples collected from Source No. 1 revealed the presence of PCBs (Aroclor-1260) in surface soil; however, a limited number of soil samples were collected. An area of contaminated soil cannot be documented based on the available laboratory analytical data; therefore, the area of soil contamination associated with Source No. 1 is undetermined but greater than zero, and is assigned a hazardous waste quantity (HWQ) value of > 0 (Ref. 1, Table 2-5).

Area Assigned Value: >0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source area HWQ value for Source No. 1 is assigned a value of >0 (Ref. 1, Table 2-5).

Source HWQ Value: >0

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Area of Concern (AOC) 7
Number of source: 2
Source type: Contaminated Soil

Source 2 is an area of PCB-contaminated soil identified in Area AOC-7. AOC-7 was identified as an area of concern southwest of building numbers 10 and 11 (Ref. 3, p. 46; Ref. 7, p. 95). In August 2001, Curtis Specialty Papers completed a PA report for the Curtis Papers facility (formerly owned by the James River Paper Company) (Ref. 3, pp. 1 and 14). The PA identified areas of concern within the area of AOC-7 including a cinder block structure and underground storage tanks (USTs) that contained ethyl acetate and methyl alcohol. The cinder block structure appeared to be a sump that reportedly discharged onto the ground surface in AOC-7 (Ref. 3, p. 46).

A layout of AOC-7 is shown in Reference 7, page 106. The layout shows a cinder block sump structure and locations of two former USTs (Ref. 7, p. 106).

As documented in Table 8 of this HRS documentation record, Source 2 is an area of PCB (Aroclor-1260)-contaminated soil in the vicinity of AOC-7.

Location of source, with reference to a map of the facility: Source 2 (AOC-7) is located in the eastern portion of the facility (Ref. 7, p. 95). See Reference 16 for the location of the source.

Containment:

Release to ground water: The ground water migration pathway was not scored.

Release via overland migration and/or flood: As documented in Table 8 of this HRS documentation record, surface soil samples collected from AOC-7 contain PCBs (Aroclor-1260). No maintained engineered cover or functioning and maintained run-on control system and runoff management system are documented in AOC-7 (Ref. 3, p. 46; Ref. 9, pp. 9 and 10). Therefore, a containment factor value for the surface water migration pathway is assigned a value of 10 (Ref. 1, Table 4-2).

Gas release to air: The gas release to air migration pathway was not scored.

Particulate release to air: The particulate release to air migration pathway was not scored.

2.4 WASTE CHARACTERISTICS

2.4.1 HAZARDOUS SUBSTANCES

On May 21 to 29, 2007, the EPA START collected surface soil samples from AOC-7 (Ref. 46, pp. 1 and 6; Ref. 32). No background soil samples were collected. Therefore, background samples collected in August 2007 are used to document background concentrations. The soil samples were analyzed for PCBs through the CLP (Ref. 32; Ref. 46, p. 2). Surface soil samples were collected from 0 to 24 inches bgs using a decontaminated stainless steel trowel (Ref. 4, p. 13 of 26). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4. Concentrations of PCBs detected in the soil samples are documented in Table 8 of this HRS documentation record. The soil sampling locations are shown in Reference 33.

On August 14, 2007, the EPA START collected surface soil samples from AOC-7 (Ref. 10, p. 1). Two background surface soil samples also were collected (Ref. 10, pp. 2 and 30). The soil samples underwent multiple analyses through the CLP, including all parameters on the EPA TCL (Ref. 10, p. 2). Surface soil samples were collected from 0 to 24 inches bgs using a decontaminated stainless steel trowel (Ref. 4, p. 13 of 26). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4. A description of the soil samples are provided in Table 7 of this HRS documentation record.

The background and surface soil samples were similar because the samples: (1) were collected using the same procedures as documented in References 4 and 10; (2) were collected within the same time frame and therefore, the same weather conditions (Ref. 8, p. 3; Ref. 10, pp. 21 and 30); (3) were collected at locations with similar topography and land use (Ref. 10, p. 8; Ref. 33; Ref. 46, p. 2); (4) were analyzed using the same methods (Ref. 4, p. 13 of 26; Ref. 10, pp. 8, 21, 22, and 30); and (5) were collected from the same soil type (Ref. 16; Ref. 19; Ref. 20). A description of the background and release soil samples is presented in Tables 5 and 7 of this HRS documentation record. Two of the source soil samples had an oil odor (Ref. 9, p. 9). The background surface soil samples JRP52-SS-0114-P4 and JRP53-SS-0118-P4 were used to document the background surface soil concentrations in Table 4 of this HRS documentation record. PCBs (Aroclor-1260) were not detected in either of the two background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) (Ref. 10, p. 30; Ref. 11, pp. 262 and 263). The sampling locations are provided in Reference 10, Figure 2, page 8; Reference 16; and Reference 33.

As documented in Table 4, PCBs were detected in soil samples collected from Source 2, AOC-7 (Ref. 16). A review of Reference 7, page 95, and Reference 16, illustrates that the soil samples collected from AOC-7 were located within the boundaries of the Curtis Papers facility. The facility operated at this location as a paper company for 90 years (Ref. 3, p. 1). No other source of PCB contamination other than the paper company has been identified in this area.

TABLE 5
BACKGROUND SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample Identification on maps and in logbook)	Sample Description	Location	Reference
JRP52-SS-0114-P4 (SS-52)	Surface soil, moderate brown sandy silt, loose, rootlets and other organic material; then moderate brown silty sand and gravel, loose, gravel up to 4 inches in diameter	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to an abandoned building near 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30
JRP53-SS-0118-P4 (SS-53)	Moderate brown clayey silt; then moderate brown clayey silt and gravel	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30

Notes:

Sample numbers recorded in the logbook during the August 2007 sampling (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP15-SS-0106-P4 was recorded in the logbook as SS-15 (Ref. 10, pp. 8 and 23; Ref. 9, p. 9).

JRP James River Paper (a former owner of the Curtis Papers facility)
P Sample event 4
SS Surface Soil

TABLE 6
BACKGROUND SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP52-SS-0114-P4 (SS-52)	B4DT1	8/17/2007	PCBs (Aroclor-1260)	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 262; 40
JRP53-SS-0118-P4 (SS-53)	B4DT2	8/17/2007	PCBs (Aroclor-1260)	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 263; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP06-SS-1224-P4 was recorded in the logbook as SS-06 (Ref. 10, p. 8; Ref. 9 pp. 5-7).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 122 through 125.

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
JRP James River Paper (a former owner of the Curtis Papers facility)
P Sample event 4
PCBs Polychlorinated biphenyls
SS Surface soil
SQL Sample Quantitation Limit
U Not detected at or above the SQL

TABLE 7
SOURCE 2 (AOC-7)
SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample Identification on maps and in logbook)	Sample Description	Location	Reference
JRP02-SS-0112 (02-SS)	Description not available	Outside loading dock (AOC-7), southern portion of the facility, about 750 east of the Delaware River	8, p. 3; 46, p. 6
JRP03-SS-0112 (03-SS)	Description not available	Outside loading dock (AOC-7), southern portion of the facility, about 750 east of the Delaware River	8, p. 3; 46, p. 6
JRP15-SS-0106-P4 (SS-15)	Black silty-sand, fill material with gravel and debris, oil odor	Oil stained area of AOC-7, southern portion of the facility, about 750 east of the Delaware River	9, p. 9; 10, pp. 8 and 22
JRP16-SS-0106-P4 (SS-16)	Black silty-sand, fill material with gravel and debris	Oil stained area of AOC-7, southern portion of the facility, about 750 east of the Delaware River	9, p. 9; 10, pp. 8 and 22
JRP17-SS-0106-P4 (SS-17)	Black silty-sand fill material with gravel	Oil stained area of AOC-7, southern portion of the facility, about 750 east of the Delaware River	9, p. 9; 10, pp. 8 and 22
JRP18-SS-0106-P4 (SS-18)	Medium brown silty-sand with gravel	Southern portion of the facility, about 750 east of the Delaware River	9, p. 10; 10, pp. 8 and 22

Notes:

Sample numbers recorded in the logbook during the August 2007 sampling (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP15-SS-0106-P4 was recorded in the logbook as SS-15 (Ref. 10, pp. 8 and 23; Ref. 9, p. 9). Sample numbers recorded in the logbook during the May 2007 sampling (Reference 8, pages 3 through 5) are only recorded as location numbers such as PCB location 2. The full sample identification for PCB location 2 is JRP02-SS-0112 (Ref. 46, pp. 6 and 8).

AOC Area of concern
JRP James River Paper (a former owner of the Curtis Papers facility)
P Sample event 4
SS Surface Soil

TABLE 8
SOURCE 2 - SURFACE SAMPLE ANALYTICAL RESULTS

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP02-SS-0112 (02-SS)	B02J6	5/21/2007	PCBs (Aroclor-1254)	680 J	361	46, pp. 1, 2, 6, 8, 12; 32, p. 10; 33; 8, p. 3; 40
JRP03-SS-0112 (03-SS)	B02J7	5/21/2007	PCBs (Aroclor-1254)	450 JN	352	46, pp. 1, 2, 6, 8, 12; 32, p. 11; 33; 8, p. 3; 40
JRP15-SS-0106-P4 (SS-15)	B4DK8	8/14/2007	PCBs (Aroclor-1260)	56	36	10, pp. 1, 22, 51; 9, p. 9; 12, p. 773; 40
JRP16-SS-0106-P4 (SS-16)	B4DL6	8/14/2007	PCBs (Aroclor-1260)	43	34	10, pp. 1, 22, 51; 9, p. 9; 12, p. 778; 40
JRP17-SS-0106-P4 (SS-17)	B4DL0	8/14/2007	PCBs (Aroclor-1260)	63	36	10, pp. 1, 22, 51; 9, p. 9; 12, p. 774; 40
JRP18-SS-0106-P4 (SS-18)	B4DL1	8/14/2007	PCBs (Aroclor-1260)	49	42	10, pp. 1, 22, 51; 9, p. 10; 12, p. 775; 40

Notes:

Sample numbers recorded in the logbook during the August 2007 sampling (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP15-SS-0106-P4 was recorded in the logbook as SS-15 (Ref. 10, pp. 8 and 23; Ref. 9, p. 9). Sample numbers recorded in the logbook during the May 2007 sampling (Reference 8, pages 3 through 5) are only recorded as location numbers such as PCB location 2. The full sample identification for PCB location 2 is JRP02-SS-0112 (Ref. 46, pp. 6 and 8).

The data validation for the PCB analysis is presented in Reference 32, pages 2 through 5, for the samples collected in May 2007 and Reference 12, pages 755 through 758, for the samples collected in August 2007.

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
J Estimated concentration; the relative percent difference between analyte results with two chromatographic columns for PCBs (Aroclor-1254) is between 25 and 70% (Ref. 32, pp. 2, 5). The analytical results are biased unknown, however, the presence of the analyte is not in question.
JN Tentatively identified; presumptive evidence for the presence of the substance at an estimated value. The relative percent difference between analyte results with two chromatographic columns for PCBs (Aroclor-1254) is greater than 70% (Ref. 32, pp. 2, 5).
JRP James River Paper (a former owner of the Curtis Papers facility)
P Sample event 4
PCBs Polychlorinated biphenyls
SS Surface soil
SQL Sample Quantitation Limit

2.4.1 HAZARDOUS SUBSTANCES

2.4.2.1 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 2.

2.4.2.1.2 Hazardous Waste Stream Quantity

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 2.

2.4.2.1.3 Volume

The information available is not sufficient to adequately support evaluation of the volume for Source No. 2.

Volume Assigned: 0

2.4.2.1.4 Area

As documented in Table 8 of this HRS documentation record, soil samples collected from Source No. 2 revealed the presence of PCBs (Aroclor-1260) in surface soil; however, a limited number of soil samples were collected. An area of contaminated soil cannot be documented based on the available laboratory analytical data; therefore, the area of soil contamination associated with Source No. 2 is undetermined but greater than zero, and is assigned a HWQ value of > 0 (Ref. 1, Table 2-5).

Area Assigned Value: >0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source area HWQ value for Source No. 2 is assigned a value of >0 (Ref. 1, Table 2-5).

Source HWQ Value: >0

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Bank Soil
Number of source: 3
Source type: Contaminated Soil

As documented in Table 12 of this HRS documentation record, Source 3 is an area of PCB (Aroclor-1260)-contaminated soil along the eastern bank of Quequacommissacong Creek. In August 2007, the EPA START collected surface soil samples below four discharge pipe outfalls observed along the steep eastern bank of the Quequacommissacong Creek, adjacent to the coatings facility (Ref. 10, pp. 1, 25 and 26). As documented in Table 12, the soil below the outfalls contained PCBs (Aroclor-1260). A sample of sludge (JRP-SL-01-P4) from the interior of one of the pipes (pipe number 1) that discharges to Quequacommissacong Creek also contained PCBs (Aroclor-1260) at 11,000 µg/kg (Ref. 10, p. 28; Ref. 11, p. 521).

In August 2001, Curtis Specialty Papers completed a PA report for its Curtis Papers facility (Ref. 3, pp. 1 and 14). The report indicated that several pipes were noted along Quequacommissacong Creek (AOC-16D). One of the pipes was traced to the slop sink in the former research and development laboratory within building number 4737. The origins of the remaining open pipes were not known (Ref. 3, p. 52). The report also indicated two permitted discharges to Quequacommissacong Creek (AOC-6E): Outfalls 002 and 003 (Ref. 3, pp. 3, 52). NJPDES Outfall 002 was permitted for the coatings non-contact cooling water, and NJPDES Outfall 003 was permitted for coatings storm water (Ref. 3, pp. 3 and 36). The locations of Outfalls 002 and 003 are shown in Reference 7, page. 116.

The original source of the PCBs in the bank soil (Source 3) may include areas of known PCB contamination that drained to the outfalls into Quequacommissacong Creek. These areas include: (1) the main transformer yard (AOC-2) (Ref. 7, pp. 11 and 12); (2) interior transformer yard (AOC-3) (Ref. 7, pp. 14 and 15); (3) auxiliary transformer substation (AOC-4) (Ref. 7, p. 16); (4) mill basement transformer(AOC-5) (Ref. 7, p. 18); (5) bulldozer shed area (location of an isolated PCB hot spot (Rf. 7, pp. 23 and 25); (6) PCB transformers and spill area adjacent to Building No. 54 (Ref. 7, pp. 27 and 28) (7) interior courtyard (AOC-13) (Ref. 7, p. 30); and (8) mill transformer (AOC-15) (Ref. 7, p. 32). Based on the locations of these AOCs shown on page 95 of Reference 7 and the topography of the area shown in Reference 13, these areas of PCB contamination might drain to Quequacommissacong Creek through sewers, drainage ditches, and overland flow. Available documents do not identify surface water runoff pathways for these areas of PCB contamination. In addition, the origin and drainage areas of the pipes located in the eastern bank of Quequacommissacong Creek cannot be definitively documented. There were only two permitted outfalls from the facility into Quequacommissacong Creek (Outfall 002 and Outfall 003). During the START sampling event, numerous pipes were observed located in the eastern bank of Quequacommissacong Creek; therefore, they may receive drainage from other areas of the facility including the AOCs listed above that have been documented to be contaminated with PCBs (Ref. 6, p. 26; Ref. 7, p. 116; Ref. 8, pp. 20 and 21; Ref. 18).

Permitted discharges to Quequacommissacong Creek included historic discharges from within and around the coatings facility and from the drainage system for the coatings facility (Ref. 7, p. 50). Sumps located on the facility also discharged to Quequacommissacong Creek (Ref. 7, pp. 44 and 47). The areas that drain to the sumps have not been identified in reference documentation. Some of the sumps are shown in Reference 7, page 115, which shows the sumps discharging

directly into Quequacommissacong Creek (Ref. 7, p. 115). The floor drains within the solvent recovery building all converge to one location and discharge to Quequacommissacong Creek (Ref. 7, p. 44).

As documented in Section 4.0 of this HRS documentation record, no PCBs were detected in sediment samples of Quequacommissacong Creek upstream the facility outfalls or sources. Other than the Curtis Papers facility, no other potential source of PCBs has been identified upstream of Source 3.

Location of source, with reference to a map of the facility: See Reference 16 for the location of the source. Source 3 includes sampling locations SS-46, SS-47, SS-48, and SS-49 as shown in the upper left corner of Reference 16.

Containment:

Release to ground water: The ground water migration pathway was not scored.

Release via overland migration and/or flood: As documented in Table 12, surface soil samples collected from the eastern bank of Quequacommissacong Creek contained PCBs (Aroclor-1260). No maintained engineered cover or functioning and maintained run-on control system and runoff management system are documented for bank soil samples (Ref. 9, pp. 20 and 21). Therefore, a containment factor value for the surface water migration pathway is assigned a value of 10 (Ref. 1, Table 4-2).

Gas release to air: The gas release to air migration pathway was not scored.

Particulate release to air: The particulate release to air migration pathway was not scored.

2.4 WASTE CHARACTERISTICS

2.4.1 HAZARDOUS SUBSTANCES

On August 14, 2007, the EPA START collected surface soil samples from five locations below discharge pipe outfalls observed along the steep eastern bank of Quequacommissacong Creek (Ref. 10, p. 1). Two background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) (Ref. 10, pp. 2 and 30) also were collected. The soil samples underwent multiple analyses through the CLP, including all parameters on the EPA TCL (Ref. 10, p. 2). Surface soil samples were collected from 0 to 24 inches bgs using a decontaminated stainless steel trowel (Ref. 4, p. 13 of 26). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4.

The background and surface soil samples were similar because the samples: (1) were collected using the same procedures as documented in References 4 and 10; (2) were collected within the same time frame and therefore, the same weather conditions (Ref. 10, pp. 21 and 30); (3) were collected at locations with similar topography and land use (Ref. 10, p. 8); (4) were analyzed using the same methods (Ref. 4, p. 13 of 26; Ref. 10, pp. 8, 21, 22, and 30); and (5) were collected from the same soil type (Ref. 16; Ref. 19; Ref. 20). A description of the background and release soil samples is presented in Tables 9 and 11 of this HRS documentation record. The background surface soil samples JRP52-SS-0114-P4 and JRP53-SS-0118-P4 were used to document the background surface soil concentrations in Table 10 of this HRS documentation record. PCBs (Aroclor-1260) were not detected in either of the two background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) (Ref. 10, p. 30; Ref. 11, pp. 262 and 263). The sampling locations are provided in Reference 10, Figure 2, page 8, and Reference 16.

As documented in Table 12 of this HRS documentation record, PCBs were detected in soil samples collected from the bank of Quequacommissacong Creek, along the northern boundary of the Curtis Papers facility (Ref. 16). A review of Reference 7, page 95, and Reference 16, illustrates that the soil samples collected from eastern bank of Quequacommissacong Creek were located within the boundaries of the Curtis Papers facility. The facility operated at this location as a paper company for 90 years (Ref. 3, p. 1). No other source of PCB contamination, other than the paper company, has been identified in this area.

TABLE 9
BACKGROUND SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample identification on maps and in logbook)	Sample Description	Location	Reference
JRP52-SS-0114-P4 (SS-52)	Surface soil, moderate brown sandy silt, loose, rootlets and other organic material; then moderate brown silty sand and gravel, loose, gravel up to 4 inches in diameter	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to an abandoned building near 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30
JRP53-SS-0118-P4 (SS-53)	Moderate brown clayey silt; then moderate brown clayey silt and gravel	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30

Notes:

JRP James River Paper Company (a former owner of the Curtis Papers facility)
P Sample event 4
SS Surface Soil

TABLE 10
BACKGROUND SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP52-SS-0114-P4 (SS-52)	B4DT1	8/17/2007	PCBs (Aroclor-1260)	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 262; 40
JRP53-SS-0118-P4 (SS-53)	B4DT2	8/17/2007	PCBs (Aroclor-1260)	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 263; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP06-SS-1224-P4 was recorded in the logbook as SS-06 (Ref. 10, p. 8; Ref. 9 pp. 5-7).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 122 through 125.

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
JRP James River Paper (a former owner of the Curtis Papers facility)
SS Surface soil
P Sample event 4
SQL Sample Quantitation Limit
U Not detected at or above the SQL

TABLE 11
SOURCE 3 SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample Identification on maps and in logbook)	Sample Description	Location	Reference
JRP46-SS-0104-P4 (SS-46)	Clayey silt	Eastern bank of Q-Creek, below discharge pipe #1, north section of the facility	9, pp. 20 and 21; 10, pp. 8 and 25
JRP47-SS-0104-P4 (SS-47)	Silty-sand	Eastern bank of Q-Creek, below discharge pipe #1, north section of the facility	9, p. 21; 10, p. 8 and 25
JRP48-SS-0104-P4 (SS-48)	Silty-sand	Eastern bank of Q-Creek, below discharge pipe #2, north section of the facility	9, p. 21; 10, p. 8 and 25
JRP49-SS-0104-P4 (SS-49)	Silty-sand	Eastern bank of Q-Creek, below discharge pipe #3, north section of the facility	9, p. 21; 10, p. 8 and 25

Notes:

Sample numbers recorded in the logbook during the August 2007 sampling (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP15-SS-0106-P4 was recorded in the logbook as SS-15 (Ref. 10, pp. 8 and 23; Ref. 9, p. 9).

JRP James River Paper (a former owner of the Curtis Papers facility)
P Sample event 4
Q-Creek Quequacommissacong Creek
SS Surface Soil

TABLE 12
SOURCE 3 (BANK) SURFACE SOIL SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP46-SS-0104-P4 (SS-46)	B4DP4	8/16/2007	PCBs (Aroclor-1260)	2,900	402	10, pp. 1, 8, 25, 72; 9, pp. 20 and 21; 11, p. 256; 40
JRP47-SS-0104-P4 (SS-47)	B4DP5	8/16/2007	PCBs (Aroclor-1260)	15,000	1,964	10, pp. 1, 8, 25, 72; 9, p. 21; 11, p. 257; 40
JRP48-SS-0104-P4 (SS-48)	B4DP6	8/16/2007	PCBs (Aroclor-1260)	220,000	21,711	10, pp. 1, 8, 25, 72; 9, p. 21; 11, p. 258; 40
JRP49-SS-0104-P4 (SS-49)	B4DP7	8/16/2007	PCBs (Aroclor-1260)	140,000	402	10, pp. 1, 8, 26, 72; 9, p. 21; 11, p. 259; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP46-SS-0104-P4 was recorded in the logbook as SS-46 (Ref. 10, pp. 8 and 23; Ref. 9, p. 20).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 122 through 125.

µg/kg Micrograms per kilogram
JRP James River Paper (a former owner of the Curtis Papers facility)
P Sample event 4
PCBs Polychlorinated biphenyls
SQL Sample Quantitation Limit
SS Surface Soil

2.4.1 HAZARDOUS SUBSTANCES

2.4.2.1 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 3.

2.4.2.1.2 Hazardous Waste Stream Quantity

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 3.

2.4.2.1.3 Volume

The information available is not sufficient to adequately support evaluation of the volume for Source No. 3.

Volume Assigned: 0

2.4.2.1.4 Area

As documented in Table 12, soil samples collected from Source No. 3 revealed the presence of PCBs (Aroclor-1260) in surface soil; however, a limited number of soil samples were collected. An area of contaminated soil cannot be documented based on the available laboratory analytical data; therefore, the area of soil contamination associated with Source No. 3 is undetermined but greater than zero, and is assigned a HWQ value of > 0 (Ref. 1, Table 2-5).

Area Assigned Value: > 0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source area HWQ value for Source No. 3 is assigned a value of >0 (Ref. 1, Table 2-5).

Source HWQ Value: >0

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Main Transformer Yard (AOC-2)
Number of source: 4
Source type: Contaminated Soil

Source 4 is an area of PCB soil contamination in the Main Transformer Yard (AOC-2). In August 2001, Curtis Specialty Papers completed a PA report for its facility (Ref. 3, pp. 1 and 14). The PA report identified staining and discoloration of the pad around AOC-2 and staining on the ground (Ref. 3, p. 45).

In August 2001, an environmental consultant to Curtis Specialty Papers conducted a site inspection of the Curtis Papers facility. The site inspection indicated that AOC-2 contained the main facility electrical transformers which may have contained PCBs. Soil samples collected from AOC-2 during the site inspection contained PCBs (Ref. 7, p. 12). The site inspection report provides a layout of AOC-2 which shows a main transformer yard, UST, well house, wells and other buildings within AOC-2 (Ref. 7, p. 98).

In May 2007, the EPA START conducted a site inspection at the Curtis Papers facility. Surface soil samples were collected at AOC-2. Two of the surface soil samples contained PCBs at 1,300 (estimated) and 18,000 parts per billion (ppb) (Ref. 46, pp. 1, 2, 6, 8, and 13; Ref. 32, pp. 23 and 24; Ref. 33).

As documented in Table 16 of this HRS documentation record, Source 4 is an area of PCB (Aroclor-1260)-contaminated soil in the Main Transformer Yard (AOC-2).

Location of source, with reference to a map of the facility: Source 4 (AOC-2) is located along the northeast boundary of the facility, south of Frenchtown Road (Ref. 7, p. 95). See Reference 33 for the location of the source.

Containment:

Release to ground water: The ground water migration pathway was not scored.

Release via overland migration and/or flood: As documented in Table 16, surface soil samples collected from Source 4 contained PCBs (Aroclor-1260). No maintained engineered cover or functioning and maintained run-on control system and runoff management system are documented for Source 4, Main Transformer Yard (Ref. 3, p. 45; Ref. 7, p. 11). Therefore, a containment factor value for the surface water migration pathway is assigned a value of 10 (Ref. 1, Table 4-2).

Gas release to air: The gas release to air migration pathway was not scored.

Particulate release to air: The particulate release to air migration pathway was not scored.

2.4 WASTE CHARACTERISTICS

2.4.1 HAZARDOUS SUBSTANCES

On May 21 to 29, 2007, the EPA START collected surface soil samples from AOC-2, Main Transformer Yard (Ref. 46, pp. 1 and 6; Ref. 33). The May 2007 soil samples were analyzed for PCBs through the CLP (Ref. 32; Ref. 46, p. 2). Surface soil samples were collected from 0 to 24 inches bgs using a decontaminated stainless steel trowel (Ref. 4, p. 13 of 26). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4. Concentrations of PCBs detected in the soil samples are documented in Table 16. The soil sampling locations are shown in Reference 33.

No background soil samples were collected. Therefore, background soil samples collected in August 2007 are used to document background concentrations. On August 14, 2007, the EPA START collected two background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) (Ref. 10, pp. 2 and 30). The background soil samples underwent multiple analyses through the CLP, including all parameters on the EPA TCL, which includes PCBs (Ref. 10, p. 2). The background surface soil samples were collected from 0 to 24 inches bgs using a decontaminated stainless steel trowel (Ref. 4, p. 13 of 26). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4.

The background and surface soil samples were similar because the samples: (1) were collected using the same procedures as documented in References 4 and 10; (2) were collected within the same time frame (Ref. 8, pp. 3-5; Ref. 10, pp. 21 and 30); (3) were collected at locations with similar topography and land use (Ref. 10, p. 8; Ref. 33); (4) were analyzed using the same methods (Ref. 4, p. 13 of 26; Ref. 10, pp. 8, 21, 22, and 30; Ref. 46, p. 2); and (5) were collected from the same soil type (Ref. 16; Ref. 19; Ref. 20). A description of the source soil samples is not available. The background surface soil samples JRP52-SS-0114-P4 and JRP53-SS-0118-P4 were used to document the background surface soil concentrations in Table 14 of this HRS documentation record. PCBs (Aroclor-1260) were not detected in either of the two background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) (Ref. 10, p. 30; Ref. 11, pp. 262 and 263). The sampling locations are provided in Reference 10, Figure 2, page 8, and Reference 16.

As documented in Table 15 of this HRS documentation record, PCBs were detected in soil samples collected from Source 4, AOC-2 (Ref. 16). A review of Reference 7, pages 95 and 98, and Reference 16, illustrates that the soil samples collected from AOC-2 were located within the boundaries of the Curtis Papers facility. The facility operated at this location as a paper company for 90 years (Ref. 3, p. 1). No other source of PCB contamination other than the paper company has been identified in this area. Source 4 was a transformer yard. PCBs are associated with transformers (Ref. 34).

TABLE 13
BACKGROUND SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample identification on maps and in logbook)	Sample Description	Location	Reference
JRP52-SS-0114-P4 (SS-52)	Surface soil, moderate brown sandy silt, loose, rootlets and other organic material; then moderate brown silty sand and gravel, loose, gravel up to 4 inches in diameter	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to an abandoned building near 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30
JRP53-SS-0118-P4 (SS-53)	Moderate brown clayey silt; then moderate brown clayey silt and gravel	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30

Notes:

JRP James River Paper Company (a former owner of Curtis Papers facility)
P Sample event 4
SS Surface Soil

TABLE 14
BACKGROUND SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP52-SS-0114-P4 (SS-52)	B4DT1	8/17/2007	PCBs (Aroclor-1260)	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 262; 40
JRP53-SS-0118-P4 (SS-53)	B4DT2	8/17/2007	PCBs (Aroclor-1260)	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 263; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP06-SS-1224-P4 was recorded in the logbook as SS-06 (Ref. 10, p. 8; Ref. 9 pp. 5-7).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 122 through 125.

µg/kg Micrograms per kilogram
JRP James River Paper (a former owner of Curtis Papers facility)
SS Surface soil
P Sample event 4
PCBs Polychlorinated biphenyls
SQL Sample Quantitation Limit
U Not detected at or above the SQL

TABLE 15
SOURCE 4 SURFACE SOIL SAMPLE LOCATIONS
MAY 2007

Sample Identification (Sample Identification on maps and in logbook)	Location	References
JRP13-SS-0112 (13-SS)	Collected from AOC-2, Main Transformer Yard	46, p. 6; 33; 7, pp. 95, 98; 8, p. 4
JRP14-SS-0112 (14-SS)	Collected from AOC-2, Main Transformer Yard	46, p. 6; 33; 7, pp. 95, 98; 8, p. 4

Notes:

Sample numbers recorded in the logbook during the August 2007 site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP46-SS-0104-P4 was recorded in the logbook as SS-46 (Ref. 10, pp. 8 and 23; Ref. 9, p. 20).

AOC Area of Concern
JRP James River Paper Company (a former owner of Curtis Papers facility)
SS Surface soil

TABLE 16
SOURCE 4 SURFACE SOIL SAMPLE ANALYTICAL RESULTS
MAY 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP13-SS-0112 (13-SS)	B02K9	5/21/2007	PCBs (Aroclor-1260)	1,300 J	363	46, pp. 1, 2, 6, 8, 13; 32, p. 23; 33; 8, p. 4; 40
JRP14-SS-0112 (14-SS)	B02L0	5/21/2007	PCBs (Aroclor-1260)	18,000	3,929	46, pp. 1, 2, 6, 8, 13; 32, p. 24; 33; 8, p. 4; 40

Notes:

Sample numbers recorded in the logbook during the May 2007 sampling (Reference 8, pages 3 through 5) are only recorded as location numbers such as PCB location 2. The full sample identification for PCB location 2 is JRP02-SS-0112 (Ref. 46, pp. 6 and 8).

The data validation for the PCB analysis of these samples is presented in Reference 32, pages 2 through 5.

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
JRP James River Paper (a former owner of Curtis Papers facility)
J Estimated concentration; the relative percent difference between analyte results with two chromatographic columns for PCBs (Aroclor-1254) is between 25 and 70% (Ref. 32, pp. 2, 5). The analytical results are biased unknown, however, the presence of the analyte is not in question.

PCBs Polychlorinated biphenyls
SS Surface soil
SQL Sample Quantitation Limit

2.4.1 HAZARDOUS SUBSTANCES

2.4.2.1 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 4.

2.4.2.1.2 Hazardous Waste Stream Quantity

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 4.

2.4.2.1.3 Volume

The information available is not sufficient to adequately support evaluation of the volume for Source No. 4.

Volume Assigned: 0

2.4.2.1.4 Area

As documented in Table 16, soil samples collected from Source No. 4 revealed the presence of PCBs (Aroclor-1260) in surface soil; however, a limited number of soil samples were collected. An area of contaminated soil cannot be documented based on the available laboratory analytical data; therefore, the area of soil contamination associated with Source No. 4 is undetermined but greater than zero, and is assigned a HWQ value of > 0 (Ref. 1, Table 2-5).

Area Assigned Value: >0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source area HWQ value for Source No. 4 is assigned a value of >0 (Ref. 1, Table 2-5).

Source HWQ Value: >0

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Old Transformer Area (AOC-15)
Number of source: 5
Source type: Contaminated Soil

Source 5 is an area of PCB-contaminated soil in the Old Transformer Yard (AOC-15) located within the main mill (Building No. 51). In 1992, PCB contamination was identified in the soil and concrete at the location of the transformer (Ref. 3, p. 49). PCB-contaminated concrete and soil were removed from Source 5 (AOC-15). Additional information regarding the sampling and the removal is not available (Ref. 7, p. 32).

In May 2007, the EPA START conducted a site inspection at the Curtis Papers facility. Surface soil samples were collected at Source 5 (AOC-15). Two of the soil samples contained PCBs at estimated concentrations of 2,200 and 9,600 parts per billion (ppb) (Ref. 46, pp. 1, 2, 6, 8, 12, and 13; Ref. 32, pp. 18 and 26; Ref. 33).

As documented in Table 20 of this HRS documentation record, Source 5 is an area of PCB (Aroclor-1260)-contaminated soil in AOC-15.

Location of source, with reference to a map of the facility: Source 5 (AOC -15) is located in the central portion of the facility (Ref. 7, p. 95). See Reference 33 for the location of the source.

Containment:

Release to ground water: The ground water migration pathway was not scored.

Release via overland migration and/or flood: As documented in Table 20 of this HRS documentation record, surface soil samples collected from Source 5 contained PCBs (Aroclor-1260). No maintained engineered cover or functioning and maintained run-on control system and runoff management system are documented for the area of soil contamination. Therefore, a containment factor value for the surface water migration pathway is assigned a value of 10 (Ref. 1, Table 4-2).

Gas release to air: The gas release to air migration pathway was not scored.

Particulate release to air: The particulate release to air migration pathway was not scored.

2.4 WASTE CHARACTERISTICS

2.4.1 HAZARDOUS SUBSTANCES

On May 21 to 29, 2007, the EPA START collected surface soil samples from AOC-15, Old Transformer Area (Ref. 46, pp. 1 and 6; Ref. 33). The May 2007 soil samples were analyzed for PCBs through the CLP (Ref. 32; Ref. 46, p. 2). Surface soil samples were collected from 0 to 24 inches bgs using a decontaminated stainless steel trowel (Ref. 4, p. 13 of 26). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4. The concentrations of PCBs detected in the soil samples are documented in Table 20 of this HRS documentation record. The soil sampling locations are shown in Reference 33.

No background soil samples were collected. Therefore, background soil samples collected in August 2007 are used to document background concentrations. On August 14, 2007, the EPA START collected two background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) (Ref. 10, pp. 2 and 30). The background soil samples underwent multiple analyses through the CLP, including all parameters on the EPA TCL, which includes PCBs (Ref. 10, p. 2). The background surface soil samples were collected from 0 to 24 inches bgs using a decontaminated stainless steel trowel (Ref. 4, p. 13 of 26). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4. The background and release surface soil samples were similar because the samples were collected using the same procedures as documented in References 4 and 10, were analyzed using the same methods (Ref. 4, p. 13 of 26; Ref. 10, pages 22, 23, and 30; Ref. 46, pp. 2; Ref. 32), and were collected from the same soil type (Ref. 16; Ref. 19; Ref. 20). The background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) were used to document the background surface soil concentrations (Table 17 of this HRS documentation record). PCBs (Aroclor-1260) were not detected in either of the two background surface soil samples (JRP52-SS-0114-P4 and JRP53-SS-0118-P4) (Ref. 10, p. 30; Ref. 11, pp. 262 and 263). The background soil sampling locations are shown in Reference 10, Figure 2, page 8, and Reference 16.

As documented in Table 20, PCBs were detected in soil samples collected from Source 5, AOC-15 (Ref. 16). Reference 7, page 95, and Reference 16, show that the soil samples collected from AOC-15 were located within the boundaries of the Curtis Papers facility. The facility operated at this location for 90 years (Ref. 3, p. 1). No other source of PCB contamination other than the paper company has been identified in this area. Source 5 was an old transformer area within the Curtis Papers facility boundaries. PCBs are associated with transformers (Ref. 34).

TABLE 17
BACKGROUND SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample identification on maps and in logbook)	Sample Description	Location	Reference
JRP52-SS-0114-P4 (SS-52)	Surface soil, moderate brown sandy silt, loose, rootlets and other organic material; then moderate brown silty sand and gravel, loose, gravel up to 4 inches in diameter	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to an abandoned building near 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30
JRP53-SS-0118-P4 (SS-53)	Moderate brown clayey silt; then moderate brown clayey silt and gravel	Curtis Papers facility, central portion, approximately 875 feet east of the Delaware River, from a yard adjacent to 404 Frenchtown Road	8, p. 16; 10, pp. 8 and 30

Notes:

JRP James River Paper Company (a former owner of Curtis Papers facility)
P Sample event 4
SS Surface Soil

TABLE 18
BACKGROUND SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP52-SS-0114-P4 (SS-52)	B4DT1	8/17/2007	PCBs (Aroclor-1260)	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 262; 40
JRP53-SS-0118-P4 (SS-53)	B4DT2	8/17/2007	PCBs (Aroclor-1260)	U	39	10, pp. 1, 8, 30, 74; 8, p. 16; 11, p. 263; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP06-SS-1224-P4 was recorded in the logbook as SS-06 (Ref. 10, p. 8; Ref. 9 pp. 5-7).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 122 through 125.

µg/kg Micrograms per kilogram
JRP James River Paper (a former owner of Curtis Papers facility)
P Sample event 4
PCBs Polychlorinated biphenyls
SS Surface soil
U Not detected at or above the SQL

TABLE 19
SOURCE 5 SURFACE SOIL SAMPLE LOCATIONS
MAY 2007

Sample Identification (Sample Identification on maps and in logbook)	Location	References
JRP09-SS-0112 (09-SS)	Collected from AOC-15, Old Transformer Area	46, pp. 1 and 6; 33; 8, p. 6; 7, pp. 32, 95
JRP16-SS-0112 (16-SS)	Collected from AOC-15, Old Transformer Area	46, pp. 1 and 6; 33; 8, p. 6; 7, pp. 32, 95

Notes:

Sample numbers recorded in the logbook during the August 2007 site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP46-SS-0104-P4 was recorded in the logbook as SS-46 (Ref. 10, pp. 8 and 23; Ref. 9, p. 20).

AOC Area of concern
JRP James River Paper (a former owner of Curtis Papers facility)
SS Surface soil

TABLE 20
SOURCE 5 SURFACE SOIL SAMPLE ANALYTICAL RESULTS
MAY 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Concentration (µg/kg)	SQL (µg/kg)	References
JRP09-SS-0112 (09-SS)	B02K4	5/21/2007	PCBs (Aroclor-1260)	2,200 JN	434	46, pp. 1, 2, 6, 8, 12; 32, p. 18; 33; 8, p. 4; 40
JRP16-SS-0112 (16-SS)	B02K8	5/21/2007	PCBs (Aroclor-1260)	9,600 J	4,342	46, pp. 1, 2, 6, 8, 13; 32, p. 22; 33; 8, p. 5; 40

Notes:

Sample numbers recorded in the logbook during the August 2007 site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP46-SS-0104-P4 was recorded in the logbook as SS-46 (Ref. 10, pp. 8 and 23; Ref. 9, p. 20).

The data validation for the PCB analysis of these samples is presented in Reference 32, pages 2 through 5.

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
J Estimated concentration; the relative percent difference between analyte results with two chromatographic columns for PCBs (Aroclor-1254) is between 25 and 70% (Ref. 32, pp. 2, 5). The analytical results are biased unknown, however, the presence of the analyte is not in question.

JN Tentatively identified; presumptive evidence for the presence of the material at an estimated value. The relative percent difference between analyte results with two chromatographic columns for PCBs (Aroclor-1254) is greater than 70% (Ref. 32, pp. 2, 5).

JRP James River Paper (a former owner of Curtis Papers facility)
P Sample period
PCBs Polychlorinated biphenyls
SS Surface soil
SQL Sample Quantitation Limit

2.4.1 HAZARDOUS SUBSTANCES

2.4.2.1 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 5.

2.4.2.1.2 Hazardous Waste Stream Quantity

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 5.

2.4.2.1.3 Volume

The information available is not sufficient to adequately support evaluation of the volume for Source No. 5.

Volume Assigned: 0

2.4.2.1.4 Area

As documented in Table 20, soil samples collected from Source No. 5 revealed the presence of PCBs (Aroclor-1260) in surface soil; however, a limited number of soil samples were collected. An area of contaminated soil cannot be documented based on the available laboratory analytical data; therefore, the area of soil contamination associated with Source No. 5 is undetermined but greater than zero, and is assigned a HWQ value of > 0 (Ref. 1, Table 2-5).

Area Assigned Value: >0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source area HWQ value for Source No. 5 is assigned a value of >0 (Ref. 1, Table 2-5).

Source HWQ Value: >0

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Pipe-1
Number of source: 6
Source type: Other

Source 6 includes a pipe known to contain PCB-contaminated sludge. The EPA START collected a sludge sample (JRP-SL-01-P4) from a pipe (Pipe-1) that discharges from the coatings facility into Quequacommissacong Creek. The sludge sample contained PCBs (Aroclor-1260) at 11,000 µg/kg (Ref. 10, pp. 1, 8, 28, and 57; Ref. 9, pp. 21 and 22; Ref. 11, p. 521).

Numerous pipes lead from the coatings facility to the eastern bank of Quequacommissacong Creek. The pipes discharge into Quequacommissacong Creek. The origin and drainage areas of the pipes cannot be definitively documented. There were only two permitted outfalls from the facility into Quequacommissacong Creek (Outfall 002 and Outfall 003). During the START sampling event, many pipes were observed located in the eastern bank of Quequacommissacong Creek (Ref. 6, p. 26; Ref. 7, p. 116; Ref. 8, pp. 20 and 21; Ref. 18).

At least four sumps were located in the coatings facility. The sumps discharged to Quequacommissacong Creek (Ref. 7, pp. 44, 47, and 115). The areas that drained to the sumps have not been identified in reference documentation. Some of the sumps are shown in Reference 7, page 115. Sometime prior to 1980, sumps 2 and 3 were rerouted to Outfall 002 which discharged to Quequacommissacong Creek. Prior to rerouting, sumps 2 and 3 discharged directly to Quequacommissacong Creek (Ref. 7, p. 44). Other discharges to Quequacommissacong Creek include floor drains within the solvent recovery building (Ref. 7, p. 44) and a floor drain in Building Number 74, former drum storage area (Ref. 3, p. 50).

Source 6, Pipe-1, may have been a pipe used for permitted discharges from the coatings facility or the pipe may have been a discharge from one of the sumps or floor drains in the coatings facility.

Location of source, with reference to a map of the facility: See Reference 16, sampling location SL-1, for the location of the source.

Containment:

Release to ground water: The ground water migration pathway was not scored.

Release via overland migration and/or flood: No maintained engineered cover or functioning and maintained run-on control system and runoff management system are documented for Source 6. Therefore, a containment factor value for the surface water migration pathway is assigned a value of 10 (Ref. 1, Table 4-2).

Gas release to air: The gas release to air migration pathway was not scored.

Particulate release to air: The particulate release to air migration pathway was not scored.

2.4 WASTE CHARACTERISTICS

2.4.1 HAZARDOUS SUBSTANCES

On August 16, 2007, the EPA START collected a sludge sample from a discharge pipe (Pipe-1) associated with the Curtis Papers coatings facility (Ref. 9, pp. 21 and 22; Ref. 10, p. 28). The sludge sample underwent multiple analyses at the laboratory used under the CLP, including all parameters on the EPA TCL (Ref. 10, p. 2). The sludge sample (JRP-SL-01-P4) contained PCBs (Aroclor-1260) at 11,000 µg/kg (Ref. 10, pp. 1, 8, 28, and 57; Ref. 9, pp. 21 and 22; Ref. 11, p. 521). The data validation for the PCB analysis of the sample is presented in Reference 11, pages 433 through 436.

TABLE 21
SOURCE 6 SLUDGE SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Sample Date	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP-SL-01-P4 (SL-01)	B4DR0	8/16/2007	PCBs (Aroclor-1260)	11,000	2,063	10, pp. 1, 8, 28, and 73; 9, pp. 21 and 22; 11, p. 521; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP06-SS-1224-P4 was recorded in the logbook as SS-06 (Ref. 10, p. 8; Ref. 9 pp. 5-7).

The data validation for the PCB analysis of the sample is presented in Reference 11, pages 433 through 436.

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
Conc. Concentration
JRP James River Paper (a former owner of Curtis Papers facility)
P Sample event 4
PCBs Polychlorinated biphenyls
SL Sludge
SQL Sample Quantitation Limit

2.4.1 HAZARDOUS SUBSTANCES

2.4.2.1 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 6.

2.4.2.1.2 Hazardous Waste Stream Quantity

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 6.

2.4.2.1.3 Volume

The information available is not sufficient to adequately support evaluation of the volume for Source No. 6.

Volume Assigned: 0

2.4.2.1.4 Area

The area of Source 6 is undetermined but greater than zero, and is assigned a HWQ value of > 0 (Ref. 1, Table 2-5).

Area Assigned Value: >0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source area HWQ value for Source No. 6 is assigned a value of >0 (Ref. 1, Table 2-5).

Source HWQ Value: >0

4.1 OVERLAND/FLOOD MIGRATION COMPONENT

4.1.1 GENERAL CONSIDERATIONS

4.1.1.1 DEFINITION OF HAZARDOUS SUBSTANCE MIGRATION PATH FOR OVERLAND/FLOOD COMPONENT

Sources 1 and 2, areas of surface soil contamination¸ are located on the southeastern section of the Curtis Papers facility (Ref. 16). During the operation of the facility, storm water on the southeastern section of the facility is presumed to have been captured by storm drains and a drainage ditch located on the southeastern section of the facility (Ref. 3, p. 36; Ref. 13; Ref. 16). The storm drains discharged to the wastewater treatment plant, which in turn discharged to the Delaware River at Outfall 001 (Ref. 3, pp. 3 and 36). The facility is currently closed and the wastewater treatment plant is not operating (Ref. 5, p. 2). Based on the topography of the facility, surface water runoff from Sources 1and 2 is currently expected to flow to the drainage ditch located on the southeastern section of the facility (Ref. 13; Ref. 16). Surface water runoff from Source 1 is expected to flow approximately 250 feet northwest to the drainage ditch. The ditch continues for approximately 500 feet to the Delaware River. Surface water runoff from Source 2 is expected to flow 125 feet southeast to the drainage ditch. The ditch continues 750 feet to the Delaware River. These measurements are estimated from References 15 and 16. The probable point of entry (PPE) for Sources 1 and 2 is located at the point where the drainage ditch merges with the Delaware River, shown as PPE-2 in References 13, 15, and 17. The drainage ditch is shown on Reference 13 (the topographic map of the facility) as a perennial unnamed tributary. However, the ditch is identified in the August 2007 sampling logbook notes as an intermittent stream (Ref. 9, pp. 3, 4, 17, 18; Ref. 10, p. 8). The stream is therefore considered an intermittent tributary.

Source 3, an area of surface soil contamination, is located on the banks of Quequacommissacong Creek (Ref. 16). The PPE for Source 3 is at soil sampling locations SS-46 (JRP46-SS-0104-P4) and SS-49 (JRP49-SS-0104-P4), as shown on Reference 16. As documented in Table 12 of this HRS documentation record, these sampling locations are contaminated with PCBs (Aroclor-1260). Soil sample SS-49 is the farthest upstream and soil sample SS-46 is the farthest downstream of contaminated soil sampling locations associated with Source 3 (Ref. 16). The PPE for Source 3 is shown as PPE-1 (at sampling location SS-49) and PPE-3 (at sampling location SS-46) on Reference 17.

Sources 4 and 5 are located in the central portion of the Curtis Papers facility as shown in Reference 7, page 95, as AOC-2 (Source 4) and AOC-15 (Source 5) and Reference 33. Surface water runoff from the sources follows the topography of the land. As shown in Reference 13, the topography of the facility and surrounding area is flat. Surface water runoff from Sources 4 and 5 could flow to the north, east, and south. Flow to the west is impeded by buildings. The actual PPE for Sources 4 and 5 is not shown because runoff from the sources can flow to either Quequacommissacong Creek, Frenchtown Road, or to the drainage ditch on the southern portion of the facility (Ref. 33). The PPE would be located between PPE-1 and PPE-2 and within the target distance limit (Ref. 15; Ref. 17; Ref. 33).

Source 6 is a pipe discharging into Quequacommissacong Creek at sampling location SL-01 (Ref. 10, p. 28). SL-1 has the same PPE to surface water as Source 3 at soil sampling location SS-46 (PPE-3) (Ref. 10, p. 8). Therefore, the PPE for Source 6 is PPE-3 (Ref. 17).

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4.1.1.2 Target Distance Limit

The 15-mile downstream target distance limit is illustrated in Reference 15 and includes Quequacommissacong Creek and the Delaware River. The target distance limit includes surface water located between the most upstream PPE (PPE-1) and 15 miles downstream of the most downstream PPE (PPE-2) (Ref. 1, Section 4.1.1.2).

4.1.2.1 LIKELIHOOD OF RELEASE

An observed release to Quequacommissacong Creek is documented in the sections below.

4.1.2.1.1 Observed Release

An observed release by both direct observation and chemical analysis is documented for Quequacommissacong Creek.

Direct Observation:

As documented in Tables 22 and 23 of this HRS documentation record, surface soil samples collected in August 2007 along the banks of Quequacommissacong Creek contained PCBs (Aroclor-1260) at concentrations documenting soil contamination. A member of the START sampling team who was present during the collection of the bank surface soil samples in August 2007 returned to the Curtis Papers facility on March 11, 2008. At that time, the bank surface soil sampling locations summarized in Table 22 were observed to be flooded by Quequacommissacong Creek, as documented in Reference 18. Because an area of contaminated soil (Source 3) was flooded by Quequacommissacong Creek, an observed release by direct observation to Quequacommissacong Creek is documented (Ref. 1, Section 4.1.2.1.1).

TABLE 22
SOURCE 3 SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample Identification on maps and in logbook)	Sample Description	Location	Reference
JRP46-SS-0104-P4 (SS-46)	Clayey silt	Eastern bank of Q-Creek, below discharge pipe #1, north section of the facility	9, pp. 20 and 21; 10, pp. 8 and 25
JRP47-SS-0104-P4 (SS-47)	Silty sand	Eastern bank of Q-Creek, below discharge pipe #1, north section of the facility	9, p. 21; 10, p. 8 and 25
JRP48-SS-0104-P4 (SS-48)	Silty sand	Eastern bank of Q-Creek, below discharge pipe #2, north section of the facility	9, p. 21; 10, p. 8 and 25
JRP49-SS-0104-P4 (SS-49)	Silty sand	Eastern bank of Q-Creek, below discharge pipe #3, north section of the facility	9, p. 21; 10, p. 8 and 25

Notes:

Sample numbers recorded in the logbook during the August 2007 sampling (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP15-SS-0106-P4 was recorded in the logbook as SS-15 (Ref. 10, pp. 8 and 23; Ref. 9, p. 9).

JRP James River Paper (a former owner of Curtis Papers facility)
P Sample event 4
Q-Creek Quequacommissacong Creek
SS Surface Soil

TABLE 23
SOURCE 3 (BANK) SURFACE SOIL SAMPLE ANALYTICAL RESULTS
AUGUST 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP46-SS-0104-P4 (SS-46)	B4DP4	PCBs (Aroclor-1260)	2,900	402	10, pp. 1, 8, 25, 72; 9, pp. 20 and 21; 11, p. 256; 40
JRP47-SS-0104-P4 (SS-47)	B4DP5	PCBs (Aroclor-1260)	15,000	1,964	10, pp. 1, 8, 25, 72; 9, p. 21; 11, p. 257; 40
JRP48-SS-0104-P4 (SS-48)	B4DP6	PCBs (Aroclor-1260)	220,000	21,711	10, pp. 1, 8, 25, 72; 9, p. 21; 11, p. 258; 40
JRP49-SS-0104-P4 (SS-49)	B4DP7	PCBs (Aroclor-1260)	140,000	402	10, pp. 1, 8, 26, 72; 9, p. 21; 11, p. 259; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample ID shown above. For example, JRP46-SS-0104-P4 was recorded in the logbook as SS-46 (Ref. 10, pp. 8 and 23; Ref. 9, p. 20).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 122 through 125.

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
JRP James River Paper (a former owner of Curtis Papers facility)
P Sample event 4
PCBs Polychlorinated biphenyls
SS Surface Soil
SQL Sample Quantitation Limit

Chemical Analysis:

On August 16, 2007, the EPA START collected nine sediment samples from Quequacommissacong Creek (Ref. 10, pp. 1, 8, 26 and 27). The sediment samples underwent multiple analyses through the CLP, including pesticides and PCBs (Ref. 10, pp. 2, 26 and 27). The EPA START collected the samples from sediments and visually observed and described in the logbook the type of sediment matrix sampled. Samples were collected from sediments exhibiting similar characteristics (Ref. 4, p. 16 of 26; Ref. 8, p. 14). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4.

The background (upstream) and release (downstream) sediment samples were similar because the samples were collected using the same procedures as documented in References 4 and 10, were analyzed using the same methods (see Reference 10, pp. 26 and 27), and were collected from the same sediment type (Ref. 8, p. 14).

Background Sampling Locations:

Three of the nine sediment samples collected in August 2007 from Quequacommissacong Creek were considered background (SD-07, SD-8, and SD-9) because the sediment samples were collected upstream of and outside of the influence of the sources that drain to Quequacommissacong Creek (Sources 3, 4, 5, and 6) (Ref. 10, pp. 8 and 27; Ref. 17). Sources 1 and 2 do not drain to Quequacommissacong Creek (Ref. 16). The locations of the three background sediment samples are documented in Table 24 of this HRS documentation record and shown on Reference 17.

TABLE 24
BACKGROUND SAMPLES – QUEQUACOMMISSACONG CREEK
AUGUST 16, 2007

Sample Identification (Sample identification on maps and in logbook)	Date	Depth (inches bgs)	Description	Location	References
JRP-SD-07-P4 (SD-07)	8/16/07	0 to 6	Silty sand with gravel	Sediment sample collected in and on the western side of Q-Creek upstream of coatings facility and discharge pipes	10, pp. 8, 27; 8, p. 14; 31
JRP-SD-08-P4 (SD-08)	8/16/07	0 to 6	Sand with gravel and silt	Sediment sample collected in and on the western side of Q-Creek upstream of coatings facility and discharge pipes	10, pp. 8, 27; 8, p. 14; 31
JRP-SD-09-P4 (SD-09)	8/16/07	0 to 6	Sand	Sediment sample collected in and on the western side of Q-Creek upstream of coatings facility and discharge pipes	10, pp. 8, 27; 8, p. 14; 31

Notes:

The sample identifications included in the logbook notes record the type of sample collected (sediment [SD] and the number [01 through 09]) only (Ref. 8). The sample identifications shown in Table 24 represent the identifications used on the chain-of-custodies and include reference to the facility's former owner, James River Paper (JRP), and sample event number (P4) (Ref. 10, pp. 27 and 58; Ref. 8, p. 14).

bgs	Below ground surface
ID	Identification
JRP	James River Paper (a former owner of Curtis Papers facility)
P	Sample event 4
Q-Creek	Quequacommissacong Creek
SD	Sediment

Background Concentrations:

The background sediment samples SD-07 (JPR-SD-07-P4), SD-08 (JPR-SD-08-P4), and SD-09 (JPR-SD-09-P4) were used to document the background sediment concentrations. As documented in Table 25, PCBs (Aroclor-1260) were not detected in the background sediment samples.

TABLE 25
BACKGROUND CONCENTRATIONS – QUEQUACOMMISSACONG CREEK
AUGUST 16, 2007

Sample Identification (Sample identification on maps and in logbook)	CLP Sample Number	Hazardous Substance	Concentration (µg/kg)	SQL (µg/kg)	References
JRP-SD-07-P4 (SD-07)	B4DR3	PCBs (Aroclor-1260)	42 U	42	10, pp. 8, 27, 73; 8, p. 14; 11, p. 524; 40
JRP-SD-08-P4 (SD-08)	B4DR4	PCBs (Aroclor-1260)	40 U	40	10, pp. 8, 27, 73; 8, p. 14; 11, p. 525; 40
JRP-SD-09-P4 (SD-09)	B4DR5	PCBs (Aroclor-1260)	42 U	42	10, pp. 8, 27, 73; 8, p. 14; 11, p. 526; 40

Notes:

The sample identifications included in the logbook notes record the type of sample collected (sediment [SD] and the number [01 through 09]) only (Ref. 8). The sample identifications shown in Table 25 represent the identifications used on the chain-of-custodies and include reference to one of the facility's former owner, James River Paper and sample event number (P4) (Ref. 10, pp. 27 and 58; Ref. 8, p. 14).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 433 - 436.

µg/kg	Micrograms per kilogram
CLP	Contract Laboratory Program
ID	Identification
JRP	James River Paper (former owner of Curtis Papers facility)
P	Sample event 4
PCBs	Polychlorinated biphenyls
Q-Creek	Quequacommissacong Creek
SD	Sediment
SQL	Sample Quantitation Limit
U	Not detected at or above the SQL

Release Sampling Locations:

One of the sediment samples collected in August 2007 from Quequacommissacong Creek contained PCBs (Aroclor-1260) at concentrations documenting an observed release as documented in Table 27 of this HRS documentation record. The location of the release sediment sample is documented in Table 26 of this HRS documentation record and shown on Reference 17.

TABLE 26
RELEASE SAMPLE – QUEQUACOMMISSACONG CREEK
AUGUST 16, 2007

Sample Identification	Date	Depth (inches bgs)	Description	Location	References
JRP-SD-04-P4 (SD-04)	8/16/07	0 to 6	Silty sand with gravel	Sediment sample collected in and on the western side of Q-Creek, downstream of coatings facility and discharge pipes	10, pp. 8, 27; 8, p. 14; 31

Notes:

bgs	Below ground surface
JRP	James River Paper (a former owner of Curtis Papers facility)
P	Sample event 4
Q-Creek	Quequacommissacong Creek
SD	Sediment

Release Concentrations:

The concentration of PCBs (Aroclor-1260) detected in the release sediment sample collected in Quequacommissacong Creek is documented in Table 27 of this HRS documentation record. As documented in Table 25 of this HRS documentation record, PCBs (Aroclor-1260) were not detected in the background sediment samples.

TABLE 27
RELEASE CONCENTRATION – QUEQUACOMMISSACONG CREEK
AUGUST 16, 2007

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP-SD-04-P4 (SD-04)	B4DQ3	PCBs (Aroclor-1260)	3,300	423	10, pp. 8, 26, and 73; 8, p. 14; 11, p. 519; 40

Notes:

The sample identifications included in the logbook notes record the type of sample collected (sediment [SD] and the number [01 through 09]) only (Ref. 8). The sample identifications shown in Table 27 represent the identifications used on the chain-of-custodies and include reference to one of the facility's former owners, James River Paper, and sample event number (P4) (Ref. 10, pp. 27 and 58; Ref. 8, p. 14).

The data validation for the PCB analysis of these samples is presented in Reference 11, pages 433-436.

µg/kg	Micrograms per kilogram
CLP	Contract Laboratory Program
ID	Identification
JRP	James River Paper (a former owner of Curtis Papers facility)
P	Sample event 4
Q-Creek	Quequacommissacong Creek
SD	Sediment
SQL	Sample Quantitation Limit

Attribution:

As documented in Table 23 of this HRS documentation record, surface soil samples collected along the banks of Quequacommissacong Creek (Source 3) are contaminated with PCBs (Aroclor-1260). The locations of the samples are shown on Reference 16 and summarized in Table 28 below.

TABLE 28
SOURCE 3 SOIL SAMPLE DESCRIPTIONS AND LOCATIONS

Sample Identification (Sample Identification on maps and in logbook)	Sample Description	Location	Reference
JRP46-SS-0104-P4 (SS-46)	Clayey silt	Eastern bank of Q-Creek, below discharge pipe #1, north section of the facility	9, pp. 20 and 21; 10, pp. 8 and 25
JRP47-SS-0104-P4 (SS-47)	Silty sand	Eastern bank of Q-Creek, below discharge pipe #1, north section of the facility	9, p. 21; 10, pp. 8 and 25
JRP48-SS-0104-P4 (SS-48)	Silty sand	Eastern bank of Q-Creek, below discharge pipe #2, north section of the facility	9, p. 21; 10, pp. 8 and 25
JRP49-SS-0104-P4 (SS-49)	Silty sand	Eastern bank of Q-Creek, below discharge pipe #3, north section of the facility	9, p. 21; 10, pp. 8 and 25

Notes:

JRP James River Paper (a former owner of Curtis Papers facility)
Q-Creek Quequacommissacong Creek
P Sample period
SS Surface Soil

On March 11, 2008, the sampling locations in Table 29 of this HRS documentation record were observed to be submerged by Quequacommissacong Creek, documenting an observed release by direct observation (Ref. 18). The surface soil sampling locations were located on the eastern bank of Quequacommissacong Creek below the discharge pipes from the coatings facility and along the drainage pathways from the coatings facility towards Quequacommissacong Creek (Ref. 9, pp. 20 to 22; Ref. 10, pp. 25 and 26). A sludge sample (JRP-SL-01-P4) collected from a pipe that discharges from the coatings facility into Quequacommissacong Creek contained PCBs (Aroclor-1260) at 11,000 µg/kg (Ref. 10, pp. 1, 8, 28, and 57; Ref. 9, pp. 20 to 22; Ref. 11, p. 521). As documented in Table 25 of this HRS documentation record, no PCBs were detected in the background sediment samples collected in Quequacommissacong Creek, indicating that a source of PCB contamination upstream of the facility does not exist. Therefore, the PCB contamination identified in the eastern bank of Quequacommissacong Creek could only be from the Curtis Papers coatings facility. Because soil samples collected at the point where the facility outfall pipes discharge into Quequacommissacong Creek and a sample of sludge (JRP-SL-01-P4) from the interior of one of the discharge pipes (Pipe-1) contained PCBs (Aroclor-1260), the probable source of PCB contamination is the discharge from the Curtis Papers facility and areas of PCB-contaminated soil on the Curtis Papers facility (Ref. 10, p. 28; Ref. 11, p. 521).

PCBs are commonly used as coolants and lubricants in transformers, capacitors, and other electrical equipment (Ref. 34). Historic sources of PCB contamination have been identified on the Curtis Papers facility. These areas include: (1) the main transformer yard (AOC-2) used for storage of leaking PCB-containing transformers and having PCB-contaminated soil and gravel (Ref. 7, pp. 11 and 12); (2) interior transformer yard (AOC-3) used for the storage of PCB-containing transformers and having PCB-contaminated soil (Ref. 7, pp. 14 and 15); (3) auxiliary transformer substation (AOC-4) and having PCB-contaminated soil (Ref. 7, p. 16); (4) mill basement transformer (AOC-5) and having PCB-contaminated concrete and soil from transformer leakage (Ref. 7, p. 18); (5) bulldozer shed area (location of an isolated PCB hot spot) (AOC-8) and having PCB-contaminated soil (Ref. 7, pp. 23 and 25); (6) PCB-contaminated transformers and spill area adjacent to Building No. 56 (AOC-11) (Ref. 7, pp. 27 and 28); (7) PCB soil contamination in the interior courtyard (AOC-13) (Ref. 7, p. 30); and (8) PCB-containing mill transformer (AOC-15) and having PCB-contaminated concrete and soil (Ref. 7, p. 32). The locations of these AOCs are shown on page 95 of Reference 7. Based on the locations of these AOCs (Ref. 7, p. 95); the topography of the area (Ref. 13); and the direction of ground water flow (southwest towards Quequacommissacong Creek) (Ref. 7, p. 96), these areas of PCB contamination may have drained to Quequacommissacong Creek through sewers, drainage ditches, and overland flow. Available documents do not identify surface water runoff pathways for these areas of PCB contamination. In addition, the origin and drainage areas of the pipes located in the eastern bank of Quequacommissacong Creek cannot be definitively documented. There were only two permitted outfalls from the facility into Quequacommissacong Creek (Outfall 002 and Outfall 003). During the 2007 START sampling event, numerous pipes were observed located in the eastern bank of Quequacommissacong Creek. Therefore, the pipes located along the eastern bank of Quequacommissacong Creek may receive drainage from other areas of the facility including the AOCs listed above that have been shown to be contaminated with PCBs (Ref. 6, p. 26; Ref. 7, p. 116; Ref. 8, pp. 20 and 21; Ref. 18).

The coatings facility drainage system discharged to Quequacommissacong Creek (Ref. 7, p. 50). Some of the discharges were permitted and included non-contact cooling water and coatings storm water (Ref. 3, pp. 3, 11, 36, 42, 52; Ref. 7, pp. 44 and 50). At least four sumps were located in the coatings facility. The sumps discharged to Quequacommissacong Creek (Ref. 7, pp. 44, 47, and 115). The areas that drained to the sumps have not been identified in reference documentation. Some of the sumps are shown in Reference 7, page 115. The sumps discharged directly into Quequacommissacong Creek (Ref. 7, p. 115). Sometime prior to 1980, sumps 2 and 3 were rerouted to Outfall 002 which discharged to Quequacommissacong Creek. Before rerouting, sumps 2 and 3 discharged directly to Quequacommissacong Creek. No samples have been collected from the sumps (Ref. 7, p. 44). Other discharges to Quequacommissacong Creek include floor drains within the solvent recovery building (Ref. 7, p. 44) and a floor drain in Building Number 74, former drum storage area (Ref. 3, p. 50).

As documented in Table 29 of this HRS documentation record, soil samples collected by the EPA START during the 2007 sampling investigation at the Curtis Papers facility identified the presence of PCBs in areas known to be used for the storage of PCB-containing transformers, waste materials, and other miscellaneous materials.

TABLE 29
SOIL SAMPLE ANALYTICAL RESULTS FOR PCBs

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP02-SS-0112 (02-SS)	B02J6	PCBs (Aroclor-1254)	680 J	361	46, pp. 1, 2, 6, 8, 12; 32, p. 10; 33; 8, p. 3; 40
JRP03-SS-0112 (03-SS)	B02J7	PCBs (Aroclor-1254)	450 JN	352	46, pp. 1, 2, 6, 8, 12; 32, p. 11; 33; 8, p. 3; 40
JRP09-SS-0112 (09-SS)	B02K4	PCBs (Aroclor-1260)	2,200 JN	434	46, pp. 1, 2, 6, 8, 12; 32, p. 18; 33; 8, p. 4; 40
JRP11-SS-0215-P4 (SS-11)	B4DK4	PCBs (Aroclor-1260)	310	43	10, pp. 1, 22, 50; 9, p. 6; 12, p. 769; 40
JRP12-SS-0215-P4 (SS-12)	B4DK5	PCBs (Aroclor-1260)	2,100 J	38	10, pp. 1, 22, 50; 9, p. 6; 12, p. 770; 40
JRP13-SS-0215-P4 (SS-13)	B4DK6	PCBs (Aroclor-1260)	440 J	37	10, pp. 1, 22, 50; 9, p. 7; 12, p. 771; 40
JRP14-SS-0215-P4 (SS-14)	B4DK7	PCBs (Aroclor-1260)	150 J	38	10, pp. 1, 22, 50; 9, p. 7; 12, p. 772; 40
JRP15-SS-0106-P4 (SS-15)	B4DK8	PCBs (Aroclor-1260)	56	36	10, pp. 1, 22, 51; 9, p. 9; 12, p. 773; 40
JRP16-SS-0106-P4 (SS-16)	B4DL6	PCBs (Aroclor-1260)	43	34	10, pp. 1, 22, 51; 9, p. 9; 12, p. 778; 40
JRP16-SS-0112 (16-SS)	B02K8	PCBs (Aroclor-1260)	9,600 J	4,342	46, pp. 1, 2, 6, 8, 13; 32, p. 22; 33; 8, p. 5; 40
JRP17-SS-0106-P4 (SS-17)	B4DL0	PCBs (Aroclor-1260)	63	36	10, pp. 1, 22, 51; 9, p. 9; 12, p. 774; 40
JRP18-SS-0106-P4 (SS-18)	B4DL1	PCBs (Aroclor-1260)	49	42	10, pp. 1, 22, 51; 9, p. 10; 12, p. 775; 40
JRP46-SS-0104-P4 (SS-46)	B4DP4	PCBs (Aroclor-1260)	2,900	402	10, pp. 1, 8, 25, 72; 9, pp. 20 and 21; 11, p. 256; 40

Sample Identification (Sample Identification on maps and in logbook)	CLP Sample Number	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	References
JRP47-SS-0104-P4 (SS-47)	B4DP5	PCBs (Aroclor-1260)	15,000	1,964	10, pp. 1, 8, 25, 72; 9, p. 21; 11, p. 257; 40
JRP48-SS-0104-P4 (SS-48)	B4DP6	PCBs (Aroclor-1260)	220,000	21,711	10, pp. 1, 8, 25, 72; 9, p. 21; 11, p. 258; 40
JRP49-SS-0104-P4 (SS-49)	B4DP7	PCBs (Aroclor-1260)	140,000	402	10, pp. 1, 8, 26, 72; 9, p. 21; 11, p. 259; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample identification shown above. For example, JRP06-SS-1224-P4 was recorded in the logbook as SS-06 (Ref. 10, p. 8; Ref. 9 pp. 5-7).

The data validation for samples 02-SS, 03-SS, and 09-SS is presented in Reference 32, pages 2 through 5. The data validation for samples SS-11 through SS-18 is presented in Reference 12, pages 755 through 758. The data validation for samples SS-16 through SS-49 is presented in Reference 11, pages 122 through 125.

µg/kg	Micrograms per kilogram
CLP	Contract Laboratory Program
J	Estimated concentration the relative percent difference between analyte results with two chromatographic columns for PCBs (Aroclor-1254) is between 25 and 70% (Reference 32, pp. 2, 5). The analytical results are biased unknown, however, the presence of the analyte is not in question.
JN	Tentatively identified; presumptive evidence for the presence of the substance at an estimated value. The relative percent difference between analyte results with two chromatographic columns for PCBs (Aroclor-1254) is greater than 70% (Ref. 32, pp. 2, 5).
JRP	James River Paper (a former owner of the Curtis Papers facility)
P	Sample event 4
PCBs	Polychlorinated biphenyls
SS	Surface soil
SQL	Sample Quantitation Limit

PCBs were identified in the bank soil of Quequacommissacong Creek and in the sediment of one of the coatings facility discharge pipes. The presence of PCBs in the bank soil of Quequacommissacong Creek and in one of the discharge pipes to Quequacommissacong Creek indicates PCB contamination from the Curtis Papers facility has migrated to the banks of Quequacommissacong Creek through various outfalls from the facility into Quequacommissacong Creek (Ref. 7, pp. 115 and 116). The locations of the bank soil samples containing PCBs have been documented to be flooded by Quequacommissacong Creek (Ref. 18). A sediment sample collected from Quequacommissacong Creek contained concentrations of PCBs meeting the criteria for documenting an observed release to Quequacommissacong Creek as documented in Section 4.0 of this HRS documentation record. The presence of PCBs in areas known to be used for the storage of PCBs, in the banks of Quequacommissacong Creek, in the sediment of a discharge pipe from the facility, and in the sediment of Quequacommissacong Creek, indicates that the Curtis Papers facility has released PCBs to Quequacommissacong Creek.

Available documentation indicates that all sources of PCB contamination in the coatings facility area may not have been identified. Soil samples collected in the area of the coatings facility (AOC-16) were not analyzed for PCBs (Ref. 7, pp. 36 to 40, 42 to 45, 47, and 49). Historic sampling at Outfall 002 did not include PCBs analysis (Ref. 7, p. 50). No samples were collected from many of the sumps and pits in the area of the coating facility (Ref. 7, pp. 44 and 47). PCBs were detected at discharge locations from the coatings facility into Quequacommissacong Creek in a pipe that discharges into Quequacommissacong Creek and in Quequacommissacong Creek. This indicates possible unidentified areas of PCB contamination in soil in the coatings facility area (Ref. 10, pp. 1, 8, 28, and 57; Ref. 11, p. 521; Ref. 9, pp. 20 to 22; Table 23 of this HRS documentation record). Also, available documentation indicates that buildings, drainage ways, drains, and storm drains in the area of the coatings facility have not been investigated for the presence of PCB contamination (Ref. 7, Section 4.0).

On April 29, 2007, the EPA START collected sediment samples from the Delaware River (Ref. 21, p. 1 of 3). Seven sediment soil samples were collected and underwent PCBs analysis at the laboratory used under the CLP (Ref. 21, p. 2 of 3). Standard operating procedures for sample collection and documentation are provided in Appendix A of Reference 4. Sediment samples were collected upstream and downstream of Quequacommissacong Creek (Ref. 21, Appendix A, Figure 2 and Appendix C). PCBs were detected in one sediment sample collected in the Delaware River upstream of Quequacommissacong Creek and outside the influence of the facility (Ref. 21, Appendix A, Figure 2 and Appendix C; Ref. 47). Again on June 5, 2008, the EPA START collected 13 sediment samples from the Delaware River. The samples were collected and underwent PCB analyses at the laboratory used under the CLP (Ref. 28, p. 1 of 2). Sediment samples were collected upstream and downstream of Quequacommissacong Creek (Ref. 28, Appendix A, Figure 1 and Appendix B). PCBs were detected in one sediment sample collected in the Delaware River upstream of Quequacommissacong Creek and outside the influence of the facility (Ref. 21, Appendix A, Figure 1 and Appendix B; Ref. 48, p. 2).

The Crown Vantage Landfill, a National Priorities List (NPL) site, is located downstream of the Curtis Papers facility and does not drain to Quequacommissacong Creek (Ref. 30, pp. 1 and 2). The Gilbert Generating Station located at 315 Rieglesville Road in Holland Township is located west of the Curtis Papers facility and does not drain to Quequacommissacong Creek (Ref. 41).

Hazardous Substance in the Release: PCBs (Aroclor-1260)

4.1.2.2 WASTE CHARACTERISTICS

4.1.2.2.1 Toxicity/Persistence

Table 30 summarizes the toxicity and persistence factor values for the hazardous substances associated with sources at the facility and in the observed release to surface water. The values are assigned in accordance with Section 4.1.2.21 of Reference 1. The toxicity and persistence values were obtained from Reference 2.

TABLE 30
TOXICITY/PERSISTENCE FACTOR VALUES

Hazardous Substance	Source/ Observed Release	Toxicity Factor Value	Persistence Factor Value*	Toxicity/ Persistence Factor Value	Reference
Polychlorinated biphenyl	1, 2, 3, 4, 5, 6, OR	10,000	1	10,000	1, Tables 4-12 and 4-16; Table 15 of HRS documentation record: 2, p. BI-10

Notes:
* Persistence value is for a river
OR Observed Release

Toxicity/Persistence Factor Value: 10,000 (Ref. 1, Table 4-12)

4.1.2.2.2 Hazardous Waste Quantity

The hazardous waste quantity values for Sources 1, 2, 3, 4, 5, and 6 are summarized in Table 31.

TABLE 31
HAZARDOUS WASTE QUANTITY VALUES

Source No.	Source Type	Source Hazardous Waste Quantity
1	Contaminated soil	> 0
2	Contaminated soil	> 0
3	Contaminated soil	> 0
4	Contaminated soil	> 0
5	Contaminated soil	> 0
6	Other	>0

Sum of Values: > 0

The hazardous waste quantity value of 100 is assigned to the surface water migration pathway because an observed release to surface water and actual contamination at Level II concentrations in a human food chain fishery are documented. If any target for a migration pathway is subject to Level II concentrations, a value of 100 is assigned if the value obtained from Table 2-6 of Reference 1 is less than 100 (Ref. 1, Section 2.4.2.2).

HWQ Factor Value: 100

4.1.2.2.3 Waste Characteristics Factor Category Value

The toxicity/persistence and hazardous waste quantity factor values are multiplied to obtain the drinking water threat-waste characteristics factor category for the watershed from Table 2-7 of Reference 1.

10,000 (toxicity/persistence factor value) × 100 (hazardous waste quantity factor value) = 1×10^6

Using the product of the toxicity/persistence and hazardous waste quantity factor values, the waste characteristics factor category value is obtained from Table 2-7 of Reference 1, a value of 32.

Waste Characteristics Factor Category Value: 32

4.1.2.3 DRINKING WATER TARGETS

As shown on Reference 15, the Point Pleasant Pumping Station (PPPS) is located on the Pennsylvania side (west) of the Delaware River, approximately 10 miles downstream of the Delaware River PPE (PPE-1). The pumping station is an interbasin transfer facility that withdraws water from the Delaware River and transfers it to numerous water purveyors for distribution as drinking water. The station is operated by the Forest Park Water. Forest Park Water obtains water from the North Branch Neshaminy Creek. The creek flows into Lake Galena, which is the reservoir for Forest Park Water. Water released from Lake Galena flows down Neshaminy Creek to where it is drawn into the Forest Park Water Treatment Plant. In the summer months and at times of low flow, water is pumped from the Delaware River at Point Pleasant and diverted into North Branch Neshaminy Creek. Water drawn from the Delaware River is used to maintain water levels within the North Branch of Neshaminy Creek. The diversion controls the level of Lake Galena for recreational purposes, ensures a sufficient drinking water supply, and maintains base flow in the stream (Ref. 24; Ref. 44). The information needed to determine the amount of water drawn from the Delaware River at the Point Pleasant pumping station for drinking water only is not available. The water drawn from the Delaware River at Point Pleasant is used for multiple purposes (Ref. 44). Therefore, the drinking water targets are not scored (Ref. 1, Section 4.1.2.3.2).

4.1.2.3.1 Nearest Intake

Location of Nearest Drinking Water Intake: PPPS on the Pennsylvania (west) side of the Delaware River

Distance from the probable point of entry: 10 miles

Reference: 15

Potential Contamination: Type of surface water body: Large river (>10,000 to 100,000 cubic feet per second)

Dilution Weight: 0.0001

[0.0001 x 20 = 0.002 [rounded to nearest integer] = 0 (Ref. 1, Section 4.1.2.3.1 and Table 4-13;

Ref. 23)]

Nearest Intake Factor Value: 0

4.1.2.3.2 Population

4.1.2.3.2.2 Level I Concentration

N/A – there are no Level I concentrations

4.1.2.3.2.3 Level II Concentration

N/A – there are no Level II concentrations

4.1.2.3.2.4 Potential Contamination

Not scored because the information needed to determine the amount of water drawn from the Delaware River for drinking water purposes only is not available (Ref. 1, Section 4.1.2.3.1).

Potential Contamination Factor Value: Not Scored

4.1.2.3.3 Resources

The Lower Delaware River is a National Wild and Scenic River, and the segment at the PPE is a federally-designated recreational river (Ref. 15; Ref. 25; Ref. 26). Therefore, the resource factor is assigned a value of 5 (Ref. 1, Section 4.1.2.3.3).

Resources Factor Value: 5

4.1.3.2 WASTE CHARACTERISTICS

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

Table 32 summarizes the toxicity/persistence and bioaccumulation factor values for the hazardous substances associated with sources at the Curtis Papers facility and in the observed release to surface water. The values are assigned in accordance with Section 4.1.2.21 of Reference 1. The toxicity/persistence and bioaccumulation values were obtained from Reference 2.

TABLE 32
TOXICITY/PERSISTENCE FACTOR VALUES

Hazardous Substance	Source/ Observed Release	Toxicity/ Persistence Factor Value	Bioaccumulation Factor Value	Toxicity/ Persistence/ Bioaccumulation Factor Value	References
Polychlorinated biphenyls	1, 2, 3, 4, 5, 6, OR	10,000	50,000	5×10^8	1, Tables 4-12 and 4-16; Table 15 of HRS documentation record; 2, p. BI-10

Notes:

OR Observed release

Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8 (Ref. 1, Table 4-16)

4.1.3.2.2 Hazardous Waste Quantity

The hazardous waste quantity values for Sources 1, 2, 3, 4, 5, and 6 are summarized in the Table 33.

TABLE 33
HAZARDOUS WASTE QUANTITY VALUES

Source No.	Source Type	Source Hazardous Waste Quantity
1	Contaminated soil	> 0
2	Contaminated soil	> 0
3	Contaminated soil	> 0
4	Contaminated soil	> 0
5	Contaminated soil	> 0
6	Other	> 0

Sum of Values: > 0

The hazardous waste quantity value of 100 is assigned to the surface water migration pathway because an observed release to surface water and actual contamination at Level II concentrations in a human food chain fishery are documented. If any target for a migration pathway is subject to Level II concentrations, a value of 100 is assigned if the value obtained from Table 2-6 of Reference 1 is less than 100 (Ref. 1, Section 2.4.2.2).

Hazardous Waste Quantity (HWQ) Factor Value: 100

4.1.3.2.3 Waste Characteristics Factor Category Value

The toxicity/persistence factor value and bioaccumulation potential factor value are used to determine the waste characteristics factor category value. The toxicity/persistence factor value (10,000) is multiplied by the hazardous waste quantity value (100). The product of these two values (1×10^6) is multiplied by the bioaccumulation potential factor value (50,000). The product of these two values (5×10^{10}) is used to obtain the waste characteristics factor category value (320) from Table 2-7 of Reference 1.

10,000 (toxicity/persistence factor value) × 100 (hazardous waste quantity factor value) = 1×10^6

$1 \times 10^6 \times 50{,}000$ (bioaccumulation factor value) = 5×10^{10}

Using 5×10^{10}, the waste characteristics factor category value is obtained from Table 2-7 of Reference 1, a value of 320.

Waste Characteristics Factor Category Value: 320

4.1.3.3 HUMAN FOOD CHAIN THREAT – TARGETS

Actual Human Food Chain Contamination

During the August 2007 sampling event, a fisherman was observed fishing in Quequacommissacong Creek within the zone of actual food chain contamination (Ref. 42; Ref. 18, Photograph No. 7). The fisherman was fishing between PPE-1 (PCB-contaminated soil sample SS-4) and observed release sediment sample SD-04. The sampling locations documenting actual human food chain contamination are summarized in Table 34. The fisherman indicated that sunnies and small-mouth bass had been caught in Quequacommissacong Creek and had been eaten (Ref. 9, p. 22). Therefore, Quequacommissacong Creek is a human food chain fishery. As noted in Section 4.1.2.1.1, an observed release of PCBs (Aroclor-1260) to Quequacommissacong Creek is documented, based on both direct observation and chemical analysis. As documented in Table 32 of this HRS documentation record, PCBs (Aroclor-1260) have a bioaccumulation potential factor value exceeding 500. Therefore, the fisherman was fishing within the zone of the level II human food chain fishery. Additionally, NJDEP stocks Quequacommissacong Creek (Hakihokake Creek) with trout (Ref. 37, p. 2). NJDEP identified roads (Route 519, Route 614, Javes Road, and Miller Park Road) surrounding the area of observed PCB contamination in Quequacommissacong Creek as access locations to fishing areas (Ref. 45. pp. 4 and 5).

TABLE 34
SAMPLES DOCUMENTING ACTUAL CONTAMINATION OF HUMAN FOOD CHAIN

Sample ID (Sample ID on maps and in logbook)	CLP Sample Number	Hazardous Substance	Conc. (µg/kg)	SQL (µg/kg)	Sample Location	References
JRP-SD-04-P4 (SD-04)	B4DQ3	PCBs (Aroclor-1260)	3,300	423	Sediment sample collected in Q-Creek downstream of coatings facility and discharge pipes	10, pp. 8 and 26; 8, p. 14; 11, p. 519; 40
JRP46-SS-0104-P4 (SS-46)	B4DP4	PCBs (Aroclor-1260)	2,900	402	Eastern bank of Q-Creek, below discharge pipe #1, north section of the facility	10, pp. 1, 8, 25, 56; 9, pp. 20 and 21; 11, p. 256; 40
JRP47-SS-0104-P4 (SS-47)	B4DP5	PCBs (Aroclor-1260)	15,000	1,964	Eastern bank of Q-Creek, below discharge pipe #1, north section of the facility	10, pp. 1, 8, 25, 56; 9, p. 21; 11, p. 257; 40
JRP48-SS-0104-P4 (SS-48)	B4DP6	PCBs (Aroclor-1260)	220,000	21,711	Eastern bank of Q-Creek, below discharge pipe #2, north section of the facility	10, pp. 1, 8, 25, 56; 9, p. 21; 11, p. 258; 40
JRP49-SS-0104-P4 (SS-49)	B4DP7	PCBs (Aroclor-1260)	140,000	402	Eastern bank of Q-Creek, below discharge pipe #3, north section of the facility	10, pp. 1, 8, 26, 56; 9, p. 21; 11, p. 259; 40

Notes:

Sample numbers recorded in the logbook during the site inspection (Reference 9) are shortened versions of the full sample ID shown above. For example, JRP46-SS-0104-P4 was recorded in the logbook as SS-46 (Ref. 10, pp. 8 and 23; Ref. 9, p. 20).

µg/kg Micrograms per kilogram
CLP Contract Laboratory Program
Conc. Concentration
ID Identification
JRP James River Paper (a former owner of the Curtis Papers facility)
P Sample event 4
PCBs Polychlorinated biphenyls
Q-Creek Quequacommissacong Creek
SQL Sample Quantitation Limit
SS Surface Soil

SS

4.1.3.3.1 Food Chain Individual

As noted in Section 4.1.2.1.1 of this HRS documentation record, an observed release of hazardous substances having a bioaccumulation factor value of 500 or greater is documented in Quequacommissacong Creek, a human food chain fishery. The food chain individual factor is assigned a value of 45 (Ref. 1, Section 4.1.3.3.1).

Food Chain Individual Factor Value: 45 (Ref. 1, Section 4.1.3.3.1)

4.1.3.3.2 Population

Quequacommissacong Creek is a Level II concentration human food chain fishery because an observed release to the creek of a hazardous substance with a bioaccumulation factor value exceeding 500 is documented, and the creek is used for fishing for human consumption (Ref. 9, p. 22; Ref. 18, photo 7; Ref. 37, p. 3; Ref. 45, pp. 4 and 5; Table 32 and Section 4.1.2.1.1 of this documentation record). Quequacommissacong Creek is also known as Hakihokake Creek (Ref. 27, p. 76; Ref. 35). NJDEP designated Quequacommissacong Creek as Category One (C1) because of exceptional ecological significance and rated the creek as a good human food chain fishery with 13 different species identified in the stream and an optimal habitat assessment (Ref. 27, p. 82). Documentation regarding the amount of fish harvested from Quequacommissacong Creek has not been identified. Therefore, Quequacommissacong Creek is assigned a production value of greater than 0 and a human food chain population value of 0.03 (Ref. 1, Table 4-18).

Human Food Chain Population Value: 0.03

4.1.3.3.2.3 Potential Human Food Chain Contamination

Other than Quequacommissacong Creek, the Delaware River is the only human food chain fishery identified within the 15-mile downstream TDL. The river is a human food chain fishery (Ref. 22). The Delaware River has a mean flow rate of 21,300 cubic feet per second (cfs) (Ref. 23). The dilution weighted value for the Delaware River is 0.0001 (Ref. 1, Table 4-13). Because the dilution weighted value is so low, the potential human food chain contamination value is very low and therefore, not scored.

Potential Human Food Chain Contamination Value: Evaluated but not scored.

4.1.4 ENVIRONMENTAL THREAT

4.1.4.2 Waste Characteristics

4.1.4.2.1 Ecosystem Toxicity/Persistence/Bioaccumulation

Table 36 presents the ecosystem toxicity/persistence/bioaccumulation factor values for hazardous substances detected in sources with containment values greater than zero.

TABLE 35
ECOSYSTEM TOXICITY/PERSISTENCE FACTOR VALUES

Hazardous Substance	Source/ Observed Release	Ecosystem Toxicity Value*	Persistence Value**	Ecosystem Toxicity/ Persistence Factor Value	References
PCBs	1, 2, 3, 4, 5, 6, OR	10,000	1	10,000	2, p. BI-10

Notes:
* Fresh-water and salt water ecotoxicities values are the same.
** Persistence values for river.
OR Observed release

TABLE 36
ECOSYSTEM TOXICITY/PERSISTENCE/BIOACCUMULATION FACTOR VALUES

Hazardous Substance	Source/ Observed Release	Ecosystem Toxicity/ Persistence Factor Value	Ecosystem Bioaccumulation Value *	Ecosystem Toxicity/ Persistence/ Bioaccumulation Value	References
PCBs	1, 2, 3, 4, 5, 6, OR	10,000	50,000	5×10^8	1, Table 4-12; 2, p. BI-10

Note:
* Fresh-water and salt water environmental bioaccumulation values are the same.
OR Observed release

Ecosystem Toxicity/Persistence/Bioaccumulation Potential Factor Value: 5×10^8

4.1.4.2.2 Hazardous Waste Quantity

The source HWQ values for each of the three sources is greater than zero. As documented in Section 4.1.3.3 of this HRS documentation record, a human food chain fishery and sensitive environment are subject to Level II concentrations; therefore, a minimum value of 100 is assigned for the HWQ value (Ref. 1, Section 2.4.2.2 and Table 2-6).

Hazardous Waste Quantity Factor Value = 100

4.1.4.2.3 Waste Characteristics Factor Category Value

The waste characteristics factor category value is determined by taking the product of the highest ecosystem toxicity/persistence factor value (10,000) and the HWQ value (100) and multiplying the product by the highest ecosystem bioaccumulation factor value (50,000) (Ref. 1, Section 4.1.4.2.3).

$10{,}000 \times 100 = 1 \times 10^{6}$

Ecosystem toxicity/persistence factor value × Hazardous waste quantity factor value: 1×10^{6}
$1 \times 10^{6} \times 50{,}000 = 5 \times 10^{10}$

(Ecosystem toxicity/persistence X hazardous waste quantity) × ecosystem bioaccumulation potential factor value: 5×10^{10}

Waste Characteristics Factor Category Value: 320 (Ref. 1, Table 2-7)

4.1.4.3 ENVIRONMENTAL THREAT - TARGETS

Sensitive environments associated with Quequacommissacong Creek and the Delaware River are documented in the sections below.

4.1.4.3.1 Sensitive Environments

Level I and Level II concentrations and potential contamination to sensitive environments associated with Quequacommissacong Creek and the Delaware River are documented in the sections below.

4.1.4.3.1.1 Level I Concentrations

No Level I concentrations were documented. The Level I Concentrations Factor Value is 0 (Ref. 1, Section 4.1.4.3.1.1).

Level I Concentrations Factor Value: 0

4.1.4.3.1.2 Level II Concentrations

Actual environmental contamination has been documented in Quequacommissacong Creek, as documented in Section 4.1.1.1 of this HRS documentation record. As documented in Table 23 of this HRS documentation record, surface soil samples collected in August 2007 along the banks of Quequacommissacong Creek contained PCBs (Aroclor-1260) at concentrations documenting observed soil contamination. A member of the START sampling team who had collected the bank surface soil samples in August 2007 visited the Curtis Papers facility on March 11, 2008. The bank surface soil sampling locations summarized in Table 22 of this HRS documentation record were observed to be flooded by Quequacommissacong Creek, as documented in Reference 18. Because an area of contaminated soil (Source 3) was flooded by Quequacommissacong Creek, an observed release by direct observation of Quequacommissacong Creek is documented (Ref. 1, Section 4.1.2.1.1). These sampling locations are listed below.

Sample ID: JRP46-SS-0104-P4
Sample Medium: Sediment
Location: Quequacommissacong Creek.
References: See Tables 22 and 23 of this HRS documentation record and References 16 and 18.

Sample ID: JRP47-SS-0104-P4
Sample Medium: Sediment
Location: Quequacommissacong Creek.
References: See Tables 22 and 23 of this HRS documentation record and References 16 and 18.

Sample ID: JRP48-SS-0104-P4
Sample Medium: Sediment
Location: Quequacommissacong Creek.
References: See Tables 22 and 23 of this HRS documentation record and References 16 and 18.

Sample ID: JRP49-SS-0104-P4
Sample Medium: Sediment
Location: Quequacommissacong Creek.
References: See Tables 22 and 23 of this HRS documentation record and References 16 and 18.

An observed release to Quequacommissacong Creek by chemical analysis is documented in Section 4.1.2.1.1 of this HRS documentation record. The sample documenting the observed release is summarized below.

Sample ID: JRP-SD-04-P4
Sample Medium: Sediment
Location: Quequacommissacong Creek.
References: See Tables 26 and 27 of this HRS documentation record and Reference 17.

Quequacommissacong Creek is also known as Hakihokake Creek (Ref. 27, p. 76). NJDEP designated Quequacommissacong Creek as Category One (C1) because of exceptional ecological significance and rated the creek as a good Fish IBI with 13 different species identified in the stream and an optimal habitat assessment (Ref. 27, p. 82). C1 waters provide critical habitat for endangered and threatened species (Ref. 27, p. 108). The creek is protected by NJDEP for propagation of fish and wildlife and recreation (Ref. 27, pp. 80-82). Table 37 summarizes the Level II sensitive environments.

TABLE 37
LEVEL II SENSITIVE ENVIRONMENTS – QUEQUACOMMISSACONG CREEK

Sensitive Environment	Reference	Sensitive Environment Type	Sensitive Environment Value (Ref. 1, Table 4-23)
Quequacommissacong Creek is classified as having unique ecological significance	27, pp. 80, 81, 82	Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

The Level II concentrations value is the sum of the sensitive environment values subject to Level II concentrations, or 25 (Ref. 1, Section 4.1.4.3.1.2).

Level II Concentrations Factor Value: 25

4.1.4.3.1.3 <u>Potential Contamination</u>

Potential contamination to sensitive environments is not evaluated because all potentially contaminated environments are associated with the Delaware River, and the Delaware River has a high dilution factor value that yields a low potential contamination factor value (Ref. 1, Section 4.1.4.3.1.3 and Table 4-13; Ref. 23). Therefore, evaluation of potential contamination to sensitive environments would not significantly increase the HRS score.